
*The U.S. Army Concept for Maneuver in
Multi-Domain Operations, 2028-2040*

Version 1.0, 07 Jul 2020

DISTRIBUTION INSTRUCTIONS: A

PRE-PUBLICATION APPROVED CONCEPT

This page intentionally left blank

FOREWORD

From the Director


U.S. Army Futures Command Futures and Concepts Center

In 2018, TRADOC published *The US Army in Multi-Domain Operations 2028*, TP 525-3-1. MDO, as it is known, is the Army concept to deter and, if necessary, defeat in combat adversaries with the capacity and capability to challenge the United States to peer warfare in all domains and in every element of warfare. Although the nature of war, its reasons and its objectives, remain unchanged through history, the conduct of 21st Century information age warfare is distinct from 20th century mechanized warfare in many vitally important ways for which the US military in general, and the US Army in particular, must change to address. One of the clearest distinctions is the blurring of peace and war, a fact that MDO addresses by being the first Army Operating Concept to include the full spectrum of conflict from peaceful competition through Armed conflict. And although the distinction between the two at transition is blurred, make no mistake, large scale combat operations in an MDO environment are themselves distinct.

The following concept, *The U.S. Army Concept for Maneuver in Multi-Domain Operations, 2028-2040* describes how the Army will maneuver in large scale combat operations on the MDO battlefield. Although it addresses the role of maneuver in competition, this concept is focused primarily on how the Army fights at echelon to win in combat against a peer competitor. While seemingly “offensive” in nature, we must not forget that the first prerequisite for deterrence is the unquestioned ability to win in combat. This concept describes how the Army will array itself to overcome adversary stand-off and defeat enemy combat formations in depth and in detail. The Maneuver concept is nested firmly within MDO, yet also *expands* on MDO, accounting for 2 years of global operational experience, and institutional study, wargaming and experimentation.

Several key ideas underpin and enable this concept. Maneuver occurs simultaneously at every echelon through Division, Corps and higher. Maneuver occurs in competition and during a return to competition, not just armed conflict. In competition, we maneuver to gain position of advantage, shape security environments, support regional security, and enable rapid transition to armed conflict. In armed conflict, we maneuver to destroy or defeat enemy forces, control land areas and resources, and protect populations. The concept describes campaigns, the design of which must include all domains at all echelons.

A concept is the start point for change. It is the beginning of the change process, not its end. The 2018 publication of MDO initiated a series of studies, wargames and experiments which have resulted in this Maneuver concept and describes the conduct of a specific warfighting function at echelon. This concept must be followed by further effort within the Futures and Concept Center and the functional Centers of Excellence to determine how all the warfighting functions, not just maneuver, integrate to succeed in the MDO fight at every echelon. Simultaneously, this concept should initiate exploration in the operating force to develop the Tactics, Techniques, and Procedures (TTP) that will operationalize MDO maneuver. It is the operating force and institutional Army working together to achieve the precepts described in this concept that will ensure the US Army remains the most dominant land force in the world.



ERIC J. WESLEY
Lieutenant General, U.S. Army
Director, Futures and Concepts
Center

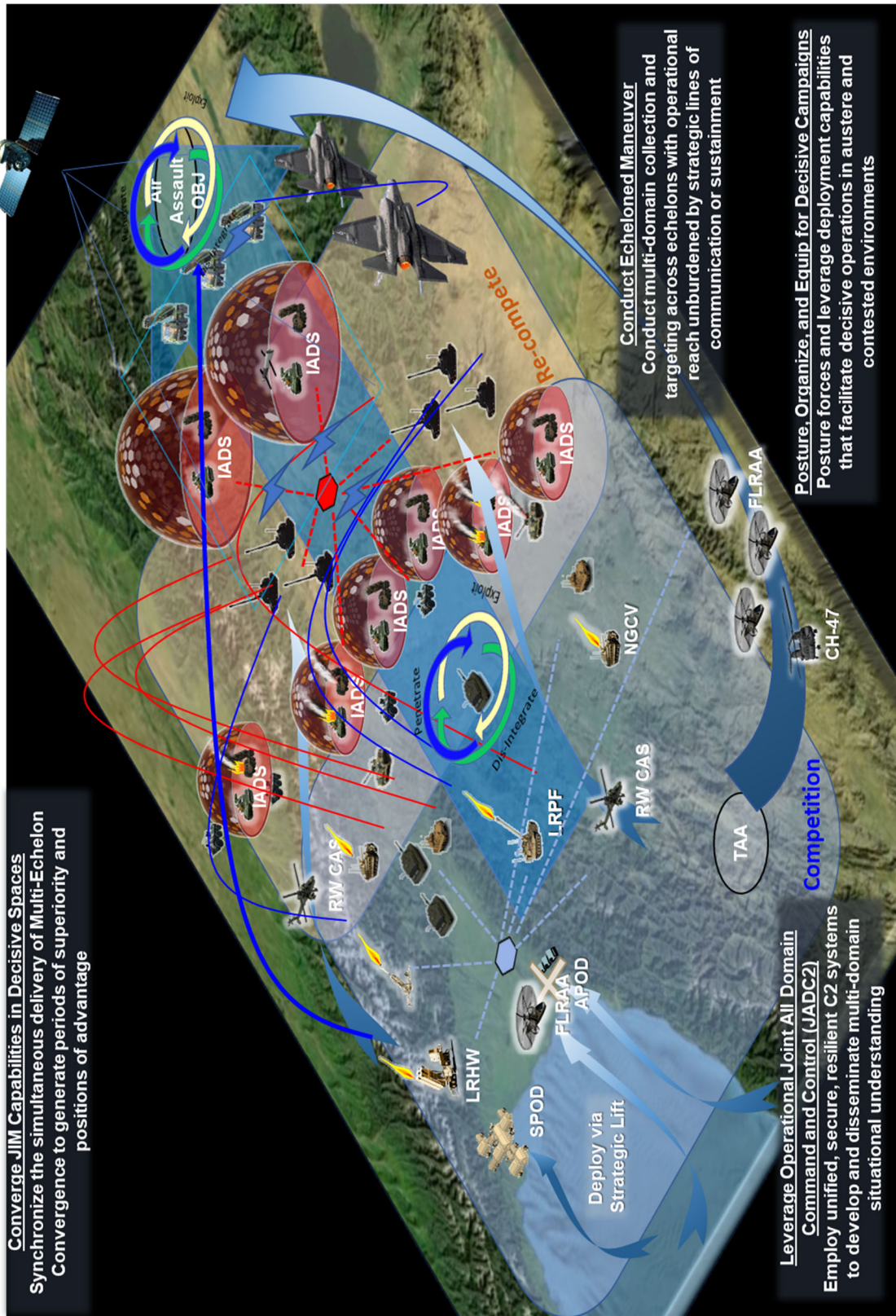


Figure 1. Maneuver in Multi-Domain Operations

The U.S. Army Concept for Maneuver



Figure 2. Logic Map

This page intentionally left blank

PRE-PUBLICATION APPROVED CONCEPT

**Department of the Army
Headquarters, U.S. Army Futures Command
210 West 7th Street
Austin, TX 78701-2982**

07 July 2020

**Military Operations
U.S. ARMY CONCEPT FOR MANEUVER IN MULTI-DOMAIN OPERATIONS,
2028-2040**

FOR THE COMMANDER:

OFFICIAL:

XXXXXXXXXXXXXXXXXXXX
Lieutenant General, U.S. Army
Deputy Commanding General/
Chief of Staff

XXXXXXXXXXXXXXXXXXXX
Senior Executive
Deputy Chief of Staff, G-6

History. This new U.S. Army Futures Command (AFC) pamphlet introduces the concept for how the Army describes the Maneuver function in 2028 to 2040. This concept together with *The U.S. Army Concept for Brigade Combat Team Cross-Domain Maneuver 2028-2040* supersede TRADOC Pam 525-3-5, *The U.S. Army Functional Concept for Movement and Maneuver* dated February 2017.

Summary. This concept describes how Army forces conduct maneuver within a dynamic and expanded operational context that includes contested battlefields and domains, integrated adversary defenses with stand-off, operational and strategic deterrence challenges, and multinational and governmental collaboration. Army forces confront highly lethal adversaries in an unpredictable operational environment, which combined with the new operational context informs the military problem to determine how Army forces achieve positions of relative advantage and generate overmatch. The central idea calculates success on simultaneous multi-echelon convergence from all domains, and promotes enhanced joint and operational command and control, echeloned maneuver, and decisive campaigns.

Applicability. This concept applies to all Department of the Army (DA) activities that develop doctrine, organizations, training, materiel, leadership and education, personnel, facilities, and policy capabilities. This concept guides experimentation, force development, and supports the Joint Capabilities Integration and Development System process. It also supports Army capabilities

development processes described in the Army Futures Command Concepts and Capabilities Guidance. When there are conflicts with other elements of the Army Concept Framework, this document takes precedence.

Proponent and supplementation authority. The proponent of this pamphlet is the Director, Directorate of Concepts (FCFC-CE), 950 Jefferson Avenue, Fort Eustis, VA 23604-5763.

Suggested improvements. Users are invited to submit comments and suggested improvements via DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Director, Futures and Concept Center (FCFC-CE), 950 Jefferson Avenue, Fort Eustis, VA 23604-5763.

Availability. This pamphlet is available on the AFC homepage at xxxxxxxxxxxxxxxxxxxxxxxxx.

Summary of changes.

AFC Pamphlet x-x-xx

U.S. Army Concept for Maneuver in Multi-Domain Operations, 2028-2040

This concept, dated XX XXXXX 2020:

- o Expands upon the principles of maneuver, combined arms, operational warfare, and multi-domain operations to operationalize the MDO concept.
- o Describes the requirement for multiple echelons to simultaneously converge lethal and nonlethal effects to enable echeloned maneuver.
- o Recognizes the need to leverage operational Joint All Domain Command and Control (JADC2).
- o Recognizes the need for an adversary focused operational-level echelon to compete with, immediately contest, and defeat peer adversaries.
- o Expands upon the concept of maneuver during armed conflict to defeat the adversary's military system.
- o Describes maneuver by Army forces from strategic and operational distances, the conduct of echeloned maneuver to enable joint force operations, and defeat adversary maneuver forces.
- o Defines maneuver as the employment of forces through movement in combination with lethal and nonlethal effects across multiple domains, the electromagnetic spectrum, and the information environment to destroy or defeat adversary forces, control land areas and resources, and protect populations.

*This publication supersedes TRADOC Pam 525-3-6, *The U.S. Army Functional Concept for Movement and Maneuver, 2020-2040*.

Table of Contents

Chapter 1 Introduction	5
1-1. Purpose	5
1-2. References	6
1-3 Explanation of abbreviations and terms	6
1-4. Background.....	6
1-5. Assumptions	8
1-6. Linkage to Army and joint concepts.....	9
1-7. Conclusion.....	10
Chapter 2 Operational Context	10
2-1. Introduction	10
2-2. Military technologies.....	12
2-3. Technology applied to global power	12
2-4. Emerging operational environment	13
2-5. Contested domains and environments	14
2-6. Vulnerabilities and weaknesses.....	17
2-7. Implications of the operational environment.....	17
Chapter 3 Military Problem and Components of the Solution	18
3-1. Military problem.....	18
3-2. Central idea.....	18
3-3. Solution synopsis.....	18
3-4. Application of maneuver to multi-domain operations.....	26
3-5. Components of the solution.....	28
3-6. Conclusion.....	31
Chapter 4 Maneuver in Multi-Domain Operations and Campaigns	32
4-1. Introduction	32
4-2. Army multi-domain operations at echelon	33
4-3. Maneuver at echelon during competition	34
4-4. Maneuver at echelon during transition to combat operations.....	38
4-5. Maneuver at echelon during large-scale combat operations	41
4-6. Maneuver at echelon during de-escalation and transition to return to competition	48
Chapter 5 Conclusion	51
Appendix A References	53
Section I	53
Required references	53
Section II.....	53
Related references.....	53
Appendix B Required Capabilities	58
B-1. Introduction.....	58
B-2. MMDO RCs.....	58
Appendix C Science and Technology	61
C-1. Introduction.....	61
C-2. Emissions control and signature management.....	61
C-3. Maneuver at echelons	64
C-4. Enabling technology for decision making	67

C-5. Conclusion	69
Appendix D Dependencies.....	70
D-1. Introduction.....	70
D-2. Dependencies derived from the MMDO concept.....	70
D-3. Dependencies on the MMDO concept.....	70
Appendix E Space and Cyberspace Scope Maneuver	70
E-1. Introduction.....	70
E-2. Example space and cyberspace tasks in scope for the MMDO concept.....	71
E-3. Example of space and cyberspace descriptions out of scope.....	71
Glossary	73
Section I Abbreviations.....	73
Section II Terms.....	74
Section III Special Terms.....	84

NOTE: Appendix D is under development. These appendix will be completed post-publication as an addendum.

Chapter 1 Introduction

1-1. Purpose

a. Army Futures Command (AFC) Pamphlet XXX-X-X, *The U.S. Army Concept for Maneuver In Multi-Domain Operations 2028-2040* (MMDO) describes how, in the future operational environment (OE), Army formations will conduct maneuver to defeat peer adversaries and regional competitors. When combined with the *Battlefield Development Plan 2019: Field Army, Corps, and Division in Multi-Domain Operations, 2028*, the MMDO Concept advances the ideas found in TRADOC Pamphlet (TP) 525-3-1, *The U.S. Army in Multi-Domain Operations 2028* (MDO Concept). These ideas will inform the defense industry and scientific community with a future vision to guide near-, mid-, and far- term core technology and advanced capability development efforts needed to build a multi-domain operations (MDO)-capable force. Experimentation, testing, and wargaming has validated and reinforced the requirements outlined in the MDO Concept. The Battlefield Development Plan (BDP) has expanded and codified this understanding.

b. This concept builds upon almost two years of study, wargaming, and experimentation since MDO was published. This concept remains nested within MDO and reflects our refined understanding of the problem and the application of the MDO central idea. Therefore, where the MMDO Concept, MDO Concept, and existing functional or supporting concepts conflict, the ideas described in the MMDO Concept takes precedence. As a concept, MMDO extends beyond historical and current doctrine by describing new ways of conducting future campaigns through multi-domain maneuver. The MMDO Concept provides the ideas for advancing maneuver at all levels of war across the competition continuum, incorporating effects from all domains and environments, and depicts how the MDO force is arrayed in time and space.

c. The MMDO Concept poses the following questions to guide its development:

- (1) What will be the Army's contribution to joint maneuver?
- (2) How will maneuver contribute to the execution of the Army's four strategic roles?¹
- (3) How will Army forces conduct maneuver in support of competition?
- (4) How will Army formations gain and maintain the initiative in competition and within their assigned area of operations (AO)?²
- (5) How will future Army formations visualize the entirety of their battlefield in all domains, the electromagnetic spectrum (EMS), and the information environment (IE) to identify decisive spaces and synchronize echeloned maneuver to maintain relative advantage while maneuvering?³
- (6) How will the Army conduct echeloned maneuver during future large scale combat operations?

(7) How will future Army formations maneuver during periods of degraded command and control (C2)?

(8) What enables future Army formations and provides the ability to consolidate gains continuously and endure for the duration of future campaigns against a peer adversary?

(9) How will future Army formations converge effects across multiple domains and environments to gain positions of advantage relative to the adversary, the terrain, and the population?

(10) How will the Army array and employ future Army formations to conduct multi-domain operations and prevail in large-scale combat against highly capable peer adversaries and regional competitors?

d. This concept proffers how Army forces maneuver to gain positions of advantage in competition and conflict. As part of a joint and multinational force, Army forces will maneuver at echelon to deter adversaries and regional competitors during competition, dominate and win in armed conflict, and return to competition on favorable terms. During competition, Army forces will support regional engagement, shape the security environment, prevent conflict, and provide options for responding to and resolving crisis. When necessary, Army forces transition rapidly to armed conflict, continuously converging lethal and nonlethal effects, and maneuver to destroy or defeat adversary forces, control land areas and resources, and protect populations.

1-2. References

Appendix A lists required and related publications.

1-3 Explanation of abbreviations and terms

The glossary explains abbreviations and special terms used in this pamphlet.

1-4. Background

a. During the Global War on Terror the US Army transitioned to a brigade combat team (BCT) centric mode of operations. This enabled the predictable rotation of combat power to Iraq and Afghanistan over secure, uncontested lines of communications. The Army was able to adopt this BCT-centric mode of operations because of the nature of the adversaries in Iraq and Afghanistan. The Army was never threatened with tactical or operational defeat above the platoon-level.

b. With the reemergence of Russia and China as adversaries this is no longer the case. Russia and China employ formations and capabilities (lethal and nonlethal) that overmatch those of the U.S. in range and lethality, thus challenging the Army's ability to conduct operational maneuver, gain positions of relative advantage, and generate close combat overmatch. These capabilities are a prerequisite for the Army to achieve the objectives that support the return to non-crisis competition on favorable terms. Unless the Army adapts to the new realities of the modern battlefield, the Joint Force could face tactical and operational defeat. Such a defeat could have strategic consequences such as loss of the cohesion of our alliances or escalation to nuclear conflict.

c. These challenges demand a return of operational-level warfighting to ensure the Army is able to support joint force objectives in competition and, if necessary, in conflict. Against a peer adversary, the Army will require four echelons to conduct maneuver in multi-domain operations: theater army, an operational-level headquarters, corps, and division.⁴ All of these echelons will be in contact simultaneously and must synchronize their fights across echelons as they engage in a continuous cycle of penetration, dis-integration, and exploitation conducted throughout the depth and breadth of the battlefield. Each of these echelons will concentrate warfighting functions on a designated aspect of the fight, freeing the others to concentrate on their portion. The result of this concentration will be the defeat of the adversary's layered standoff (anti-access and area denial methodology (A2/AD)) allowing Army forces to maneuver from operational distances and bringing the full power of the Joint Force to bear on the adversary. To maximize the potential of the operational-level echelon's ability to converge multiple domains simultaneously, the Army division remains both the lowest echelon capable of multi-domain operations and the foundational maneuver echelon.⁵

d. With MDO, the Army is transitioning back from BCT to division centric maneuver. It is the Army division that will create tactical overmatch and defeat peer adversaries in the close fight by converging aviation, fires, electronic warfare, and protection assets, to support the maneuver of its BDEs to the direct fire fight. However, the division will not succeed in close combat unless the corps and an operational-level headquarters set the conditions for divisional maneuver prior to, and during, armed conflict. In addition to allocating resources to help its subordinates succeed in the close fight, the corps will converge Army long range precision fires (LRPF), aviation, and cyber-electromagnetic activities (CEMA), to defeat the adversary's mid-range systems and enabling its subordinate divisions to prevail in the close fight.

e. An operational-level headquarters will maneuver multiple corps, at least one of which will likely be multinational. The operational-level headquarters converges national capabilities, CEMA, space capabilities, special operations forces (SOF), aviation, and LRPF to penetrate and dis-integrate the adversary's long-range fires and its integrated air defense system (IADS). These actions enable the operational-level headquarters to maneuver from operational distances to bring its subordinate echelons to the fight with the ability to achieve overmatch against the adversary's forces. The theater army integrates space and information capabilities throughout the theater of operations in support of the operational-level headquarters and the Joint Force. A host of sensors across the depth of the battlefield and within range of adversary indirect fire require that camouflage, concealment, and deception—conducted in all domains—become an integral part of operations at every echelon.

f. All of this will take place in the course of campaigns, not battles. For while it is natural to desire to win in as short of a conflict as possible, peer adversaries have resilient military systems and the Joint Force must plan for campaigns. The operational-level headquarters will develop these campaign plans and supervise their execution in both competition and conflict ensuring the adversary is kept off balance and allowing U.S. forces to maintain the initiative. This makes the theater army's requirement of setting the theater and calibrating effective force posture especially important.

1-5. Assumptions

a. The assumptions from the MDO Concept, *Battlefield Development Plan 2019*, and the BDP apply to this concept.

b. The following assumptions also apply:

(1) The division will be the Army's primary combined arms, close combat, tactical fighting formation capable of executing limited multi-domain operations. When employed, it will be able to operate as an independent, task-organized, multi-domain formation.

(2) In large-scale combat operations against a peer adversary, the corps and division will operate primarily at the tactical level, conducting MDO or cross-domain maneuver as necessary to ensure success. Brigades (BDEs) will conduct cross-domain maneuver.

(3) In geographic combatant commands (GCCs) without a dedicated operational-level warfighting headquarters, the theater army can perform that role for a limited period of time against regional competitors with augmentation. However, this additional role may significantly impact their execution of Army service component command responsibilities in support of the Combatant Commander.

(4) The Joint Force and Army formations will need to continuously converge lethal and nonlethal effects across multiple domains, the EMS, and IE to enable units to conduct echeloned maneuver. Echeloned maneuver is Army air-ground movement in depth supported by ground fires in conjunction with air, maritime, space and cyberspace generated effects to gain positions of advantage, penetrate adversary defenses, and conduct exploitation. Echeloned maneuver provides agility, resilience, and flexibility to the force and enables independent maneuver of distributed formations or units to seize the initiative, achieve momentum, and control tempo, thus protecting the force. Echeloned maneuver overcomes the difficulty of massing at the point of successful penetration enabling higher echelons to rapidly converge Army maneuver forces with effects from other domains across an expanded battlefield. Echeloned maneuver enables operational-level commanders to seize terrain, control populations, and destroy or defeat adversary forces throughout the depth of their area of operations.

(5) Adversary forces will limit friendly freedom of action across the competition continuum. Adversarial forces will contest and attempt to disrupt Army communications, observation, sensing, precision fires, and position, navigation, and timing (PNT), and selectively deny domains and environments.

(6) The Joint Force and national assets will need to continuously converge lethal and nonlethal effects across multiple domains, the EMS, and IE to enable Army forces to maneuver.

(7) Army forces will adapt to account for the changing OE in both competition and conflict.

1-6. Linkage to Army and joint concepts

a. The Maneuver in Multi-Domain Operations concept is nested and linked conceptually with the MDO Concept and *Battlefield Development Plan 2019*. This body of work serves as a baseline for developing other Army functional, supporting, and operational and organizational concepts, by describing how those functions, formations, and capabilities will be employed in MDO. While the MMDO Concept does not re-invent or occupy the same conceptual space as the MDO Concept, it does move the Army's understanding of MDO forward. This concept remains nested within MDO, reflects a better understanding of the problem, and the application of the MDO central idea. The ideas described in the MMDO Concept takes precedence in the event there is conflict between ideas or concepts described within the MDO Concept or other Army Concept Framework documents. (See figure 1-1 for the Army Concept Framework.) The MDO and MMDO concepts support the National Defense Strategy and National Military Strategy by describing, in part, how the Army will execute operations to fulfill the Army's four strategic roles. Further, the MMDO Concept makes use of the concepts of contact, blunt, and surge forces found in the National Defense Strategy.⁶

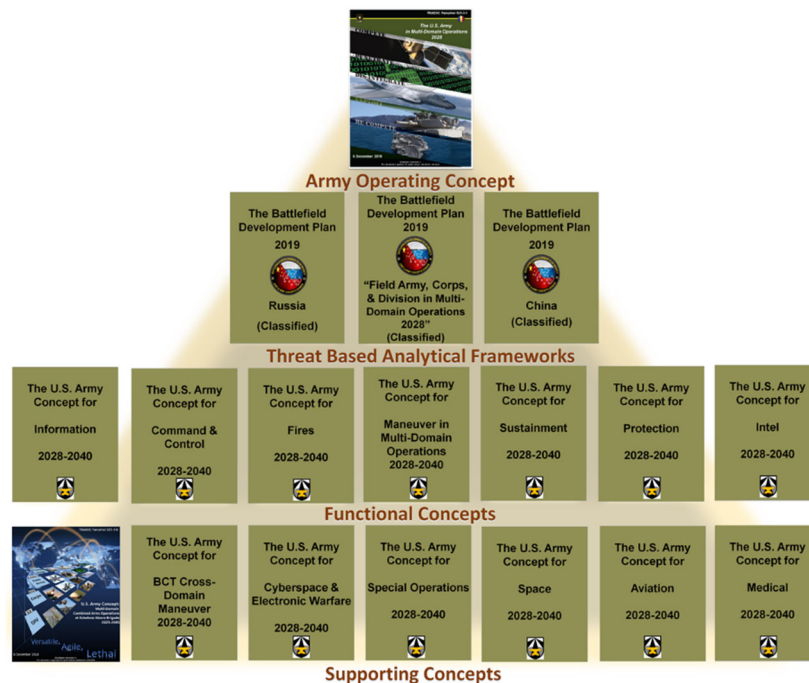


Figure 1-1. The Army Concept Framework (abridged)

b. Like the MDO concept, the MMDO Concept nests within the Joint Concept for Integrated Campaigning (JCIC) competition continuum construct. Leveraging the backdrop of the JCIC competition continuum, the MMDO Concept proposes a multi-domain, operational-level approach to maneuver that describes how Army forces contribute to deterring and, if necessary, defeating peer adversaries. The *Battlefield Development Plan 2019* operationalizes the MDO Concept at the operational and tactical levels for division and higher echelons, describing the need for independent, echeloned, multi-domain warfighting formations. The MMDO Concept adds greater detail to the Army's understanding of MDO, proposing the notion of echeloned maneuver as the nested application of MDO. These documents provide the foundation and underlying operational

logic necessary to develop the required capabilities to achieve an Army capable of executing MDO.

1-7. Conclusion

a. The MMDO Concept describes how Army formations conduct maneuver to deter adversaries and defeat or destroy adversary forces in the 2028-2040 timeframe. The MMDO Concept proposes concepts and the required capabilities necessary to provide commanders with multiple options to seize and control terrain, defeat or destroy adversary forces, protect populations, activities, and infrastructure to achieve mission objectives. The MMDO Concept operationalizes the MDO Concept, proposing echeloned maneuver as the application of MDO. The MMDO Concept espouses the rapid and continuous integration of multi-domain, EMS, and IE capabilities to deter and, if necessary, prevail during competition short of armed conflict. If deterrence fails, Army formations converge joint, inter-organizational, and multinational (JIM) capabilities to open decisive spaces enabling the Joint Force to conduct echeloned maneuver to penetrate and dis-integrate adversary A2/AD systems. Further, Army forces exploit the resulting freedom of maneuver to defeat adversary systems and formations, while consolidating gains, to force a return to competition on terms more favorable to the U.S., its Allies, and partners.

b. The MMDO Concept describes how future Army formations will continuously incorporate effects from all domains and environments to conduct maneuver at all levels of war and throughout the competition continuum to defeat peer adversaries and regional competitors. Chapter 2 describes those aspects of the future operational environment (OE) during the 2028-2040 timeframe that are relevant to the conduct of maneuver by future Army of echelons at division-level and above. Chapter 3 provides the theoretical basis for maneuver by future Army formations. Chapter 4 details the roles and responsibilities for future Army echelons at the division-level and higher, and depicts how the MDO force is arrayed in time and space.

Chapter 2 Operational Context

2-1. Introduction

a. The U.S. military, and therefore, the US Army, finds itself at a historical inflection point, where disparate, yet related elements of the operational environment (OE) are creating a dynamic where fast-moving trends across the diplomatic, information, military, and economic instruments of national power (DIME) are rapidly transforming the nature of all aspects of society and human life – including the character of warfare. This future OE will exhibit a diffusion of power that results in either a bipolar world that includes China, or a multipolar world that sees China and Russia as our peer competitors with others, potentially, as near-peers. These peer and near-peer competitors will confront us globally and use strategies and capabilities that expand the battlefield across all domains to threaten US forces and Allies from the homeland to battlefield of the close fight. The new "steady state" environment will include a continuous, dynamic, and simultaneous competition arena that elevates up to conflict in non-linear cycles.

b. The dynamic nature of transitions in this OE, from cooperation to armed conflict and the differences across the competition continuum, will become increasingly fluid, ill-defined, and relevant only to how distinction limits US options as adversaries seek to achieve their objectives short of armed conflict (“to win without fighting”) and quickly consolidate gains. Other regional competitors like Iran, North Korea, and non-state actors will take advantage of this diffusion of power. They will attempt to emulate China’s and Russia’s capabilities and apply many of their A2/AD concepts. However, all of our potential adversaries’ activities will be adjusted to fit their particular situation and strategic objectives.

c. The future OE’s diffusion of global power is accelerated by our competitors’ increasing technological optimization rate. The availability and development of cutting-edge, dual-use technologies will serve as force-multipliers for all of our adversaries’ decision making structures, and therefore, increasing the speed and complexity of the battlefield. Specific technologies like artificial intelligence (AI), quantum computing sciences, and ubiquitous information and cloud computing will help flatten intelligence collection and decision-making structures to effectively increase the speed of the battlefield. Technology has expanded access to, and use of, the IE in competition where an increasing rate of personal human interaction takes place. Additionally, the IE is where resiliency, will, and behavior can now be influenced individually from operational and strategic distances. This gives adversaries several platforms from which they can weaponize information, widening the battlefield’s depth, and provides more vectors to wage attacks in the cognitive and moral dimensions of war, often obfuscating origin and offering deniability.

	Near Term (Current -2025)	Mid Term (2025-2050)	Far Term (2035 -2050)
Ground Maneuver	<ul style="list-style-type: none"> Tank modernization (T-90, T-72, BMP-3 upgrades), Improved fire control systems, and advanced ATGMs 	<ul style="list-style-type: none"> Armata, Advanced Armor, Advanced Active Protection Systems (APS), radar-based target acquisition, large caliber gun (140mm+), Advanced Armor Piercing Rounds (+900mmRHA), Advanced ATGMs 	<ul style="list-style-type: none"> Autonomous systems, Advanced ATGMs, Integrated Ground EW (Counter-APS)
Field Artillery	<ul style="list-style-type: none"> Increase in range, Autoloading, digital fire control, sensor fuzed munitions 	<ul style="list-style-type: none"> Doubling of range, widespread use of high precision submunitions, automated laying 	<ul style="list-style-type: none"> Rail gun (electromagnetic launch), Hypervelocity ET gun, high energy tunable lasers
Aviation	<ul style="list-style-type: none"> CHN Z-10 and RUS MI-28N, increasing use of UAS 	<ul style="list-style-type: none"> Improved night mission capabilities and munitions standoff 	<ul style="list-style-type: none"> 4th generation attack systems with stealth, high speed, UAS swarms
Air and Missile Defense	<ul style="list-style-type: none"> Integrated IADS, MANPADS IRCCM capable 	<ul style="list-style-type: none"> MANPADS with reprogrammable IRCCM, reduced signature propellants 	<ul style="list-style-type: none"> Multispectral imaging, hypersonic SAMs
Electronic Attack	<ul style="list-style-type: none"> High power denial jammers 		
Cyberspace	<ul style="list-style-type: none"> Sophisticated Malware, Agents for network defense and offense 	<ul style="list-style-type: none"> Autonomous, mobile, adaptive, self-replicating malicious code 	<ul style="list-style-type: none"> Complex malware, quantum computing
Material Improvements	<ul style="list-style-type: none"> Precision and Inertial Navigation systems not requiring GPS 		<ul style="list-style-type: none"> Network Degradation: Meta-material stealth, dynamic camouflage, image fusion

d. The democratization of technology has also made space a contested domain. Adversaries have placed increased emphasis on concepts and technologies to deny U.S. forces access to, and use of, space while expanding their access and capabilities. Space and the increasingly digitized and interconnected world will improve intelligence collection, likely favoring "finders" over "hidiers" and enhancing battlefield transparency. This may result in fewer instances of strategic and operational deception and surprise. Competitors will take and combine these dual-use technologies with traditional military weapons to produce new and novel ways to attack U.S. forces, flipping the correlation of forces and means in their favor.

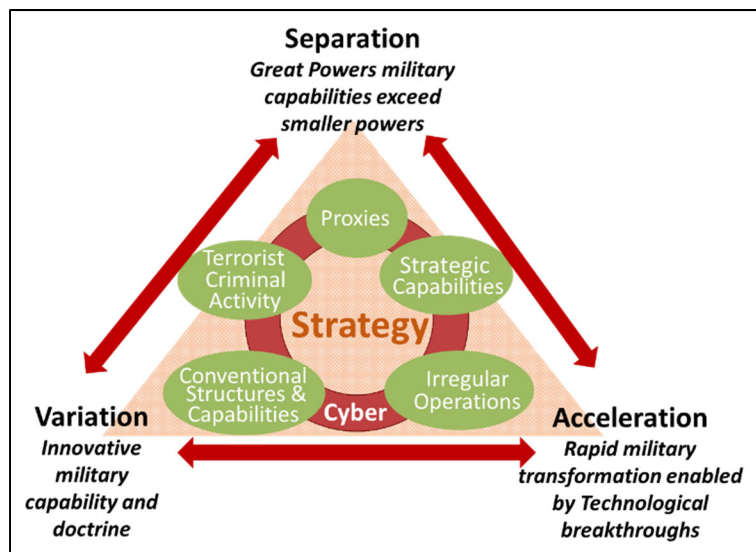
2-2. Military technologies

a. Advanced military technologies will grow through 2040 and beyond, increasing the potential for overmatch against US forces and challenge the Army's ability to prevent, shape, and win in a future conflict. Technological improvements in key areas like massed and synchronized long-range fires, electronic warfare (EW), cyber, electro-magnetic activities (CEMA), and integrated air defenses will all increase stand-off, resulting in A2/AD zones comprised of weapons designed to defeat current US capabilities.

b. Furthermore, these A2/AD zones will integrate all five domains to harden their defenses and will be designed to counter traditional kill-chain approaches. Long-range artillery and rockets will continue their current path of ever-increasing range and accuracy, working toward an environment of massed precision fires. CEMA activities and EW use will continue to increase as armies become more dependent on information systems, eventually leading to the intersection of EW and cyberspace operations. Air and missile defense systems will continue to improve, expanding and thickening coverage, better incorporating EW, and potentially incorporating energy weapons. At the tactical level, robotics, advanced multi-dimensional protection systems, sensors, and enhanced situational awareness tools will become more commonplace.

2-3. Technology applied to global power

a. The return of great power competition increases the likelihood that near-peer competitors' access to, and optimization of, technology will adjust the balance of power, preventing all but the best from rising. Strong states will increasingly distance themselves from weaker nations in three distinct forms: separation, variation, and acceleration. Separation is defined as the Great Powers, namely the U.S., China, and Russia, having capabilities that greatly exceed those of weaker nations. These three powers will achieve technological innovation that will far outpace the remainder of the world, thus creating a wide separation of military technological capabilities. Variation will arise because the Great Powers will employ advanced technology in several ways that will increase the complexity and resilience of their kill chains while also breaking adversaries' kill chains. Acceleration can be characterized as rapid military transformation enabled by technological breakthroughs. The Great Powers will be able to take advantage of their technological prowess to more rapidly modernize and adapt their forces to meet near-peer adversaries. Separation, variation, and acceleration will affect our likely adversaries in a variety of ways.



b. For China and Russia, the return of great power competition has both countries taking similar approaches to increase their influence regionally and globally. Russia is reinvigorating its regional

dominance, managing internal stability, and hopes to restore its great power status. Russia aims to divide and disrupt NATO to fracture Europe's approach to security. The combination of re-establishing its traditional spheres of influence and modernizing its military capabilities increases the risk of miscalculation and escalation. China seeks to build the most capable military in the world by pursuing a comprehensive military modernization strategy. China's goals are to displace the U.S. in the Indo-Pacific region, expand its reach through its economic model, and extend its global influence through partnerships that fall short of alliances. China has increased regional tension with aggressive maneuvers by its military and maritime forces operating in and around the East and South China Seas.

c. North Korea and Iran, and certain non-state entities, will continue to pose a threat to US interests while remaining actors in the global strategic environment. North Korea will avoid overt large-scale conflict but will employ brinkmanship tactics to extract concessions from the U.S. and South Korea. North Korea remains capable of presenting multi-domain challenges due to its significant long-range fires capabilities and demonstrated cyberspace activities. Iran can contest across all domains, with a robust cyberspace force and power projection capabilities. It has a demonstrated capability to employ ballistic missiles capable of ranging the Middle East, Israel, and parts of Europe. Iran's ground forces are armed with capable unmanned aerial vehicles, anti-tank, anti-ship, and anti-aircraft systems. Additionally, Iran maintains the ability to support, train, arm, and employ proxies through its Qods Force. Iran will likely avoid overt conflict while using all means short of conflict to achieve its goals.

d. The most capable non-state actors will be violent extremist organizations (VEOs), such as ISIS, al-Qa'ida, or Lebanese Hezbollah, who are capable of targeting U.S. interests at home and abroad. They possess a wide range of capabilities and will employ commercially available dual-use technology for military operations, particularly in the cyberspace realm. These groups have access to military-grade weapons like advanced anti-tank weapons, ballistic missiles, rockets, unmanned aerial systems (drones) and rudimentary chemical weapons that present a broad set of enduring, asymmetric, and unconventional challenges.

2-4. Emerging operational environment

US forces will have to leverage multi-domain maneuver to compete effectively prevail against peer and near-peer adversaries. The following sections focus on China and Russia, the two most capable adversarial forces the U.S. may confront in the 2028-2040 timeframe. China and Russia are the adversaries that have comparable global interests and possess capabilities with the potential to achieve parity in one or more domains and environments with US forces. China's and Russia's rate of technological optimization will continue to outpace most countries and each will make significant advances in the integration of space, cyberspace operations, electronic warfare, robotics, hypersonic missiles, and optimization of information technologies into their operations. These adversaries also seek to isolate specific warfighting functions of their opponents to prevent the effective integration of emerging and advanced capabilities against them across the conflict continuum. While the US military may not fight Russia or China in armed conflict, the proliferation of adversary operational concepts and advanced capabilities to state and non-state actors will make them more formidable.

2-5. Contested domains and environments

a. Defeating peer and near-peer adversaries will require the expansion of combined arms logic to include all five domains and the IE. The military best able to leverage all domains and environments to maneuver will create the synergy needed to improve their correlation of forces and means (inclusive of military and non-military means across the competition continuum). Conversely, preventing adversaries the ability to use several domains and environments simultaneously will put them at a disadvantage. For example, denying and degrading EW capabilities of an integrated air defense system (IADS) will increase the ability to locate and engage key components of the system. US forces will confront adaptive adversarial forces continuing to modernize their capabilities and posing as threats to U.S. forces, particularly in the areas of operational maneuver, command and control (C2), and protection. Domain equality will allow adversaries to compete and challenge US forces, thus creating opportunities they could exploit.

b. Adversaries will create capability mismatches against US forces and will exploit any technological, organizational, or technical skill asymmetries they discover. Examples of technological asymmetries are long-range A2/AD systems incorporating advantages gained within all domains or soldier medical enhancements to improve cognitive or physical capabilities. Organizational exploits will take advantage of the US government's artificial barriers, for example, Russia's information confrontation strategy that applies a whole-of-government approach to dominate the IE mixing information, electronic warfare, and cyberspace. Technical asymmetries exploit perceived US capability gaps and can include the use of improvised explosives, dense urban terrain, or subterranean structures. These mismatches will manifest itself in each of the five domains, as well as the IE and electromagnetic spectrum (EMS), described below.

c. Land domain.

(1) At the operational level, Russia, China, and other adversaries depend on layered stand-off as the core of their A2/AD system. This system consists of two key components: accurate long-range fires and a comprehensive IADS network. Long-range fires systems can provide accurate, massed fires out to thousands of kilometers, and the best are digitized with access to near-real-time intelligence. Adversary IADS networks provide a protection umbrella consisting of close protection for tactical systems that are integrated with long-range systems with coverage of several hundred kilometers. These systems are then layered with several redundancies designed to defeat, or break, US kill chains.

(2) Methodology. Should U.S. forces engage in close combat, maneuver echelons will face modernized and advanced ground systems, as well as, an array of non-line-of-sight weapon systems. Development of these armor defeat systems will potentially outpace vehicle protection modernization, providing adversaries increased stand-off and lethality with which to engage U.S. platforms. Finally, adversaries will attempt to deceive maneuver forces by creating false emissions or electronic signatures, and employ decoys to force US strike capabilities to incorrectly target and destroy non-critical systems.

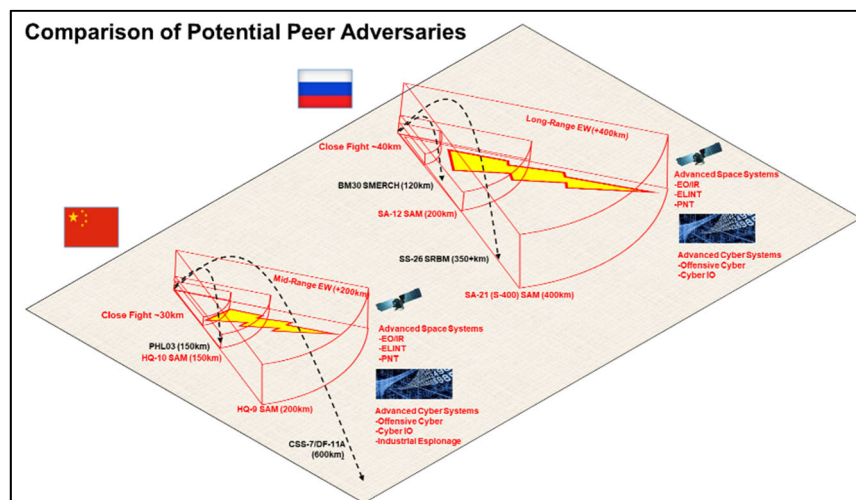
d. Air domain.

(1) Adversary forces perceive the range and depth of US airpower as one of our greatest strengths. They have, therefore, devised multiple strategies to mitigate the effects of US airpower. Airspace denial begins in competition when adversaries leverage elements of national power to gain observation over US bases or deny the United States basing access within a region. Closer to their homeland, adversaries will use extended range and layered IADS to defeat or limit the U.S. and its Allies' aerial reconnaissance, close air support, interdiction, and maneuver. These IADS consist of missiles, guns, electronic warfare systems, and radio frequency (RF) energy weapons designed to destroy aircraft and missiles.

(2) Advances in manned and unmanned air systems enable adversaries to challenge US forces at a lower fiscal cost. Inexpensive aerial drones capable of swarming will conduct a number of tasks ranging from reconnaissance to massed strikes, and will become common on the future battlefield. China and Russia will improve their manned aviation to challenge US forces advances in aircraft technology, air battle management, and expeditionary capacity. Our adversaries' aircraft and missile technology programs have developed capabilities similar to those in the U.S. Air Force. China and Russia have increased the number of airborne early warning and control systems extending A2/AD coverage and improving aerial situational awareness. Expeditionary capability improvements include an increased number of aerial refueling aircraft, a modernized cargo fleet, and improved aerial C2 capabilities operating range and endurance.

d. Maritime domain. The combination of a more contested littoral and maritime environment and the expanded range of adversaries' surface, subsurface, and amphibious forces will challenge US forces' ability to maneuver. Adversary naval forces seek to control other domains by disrupting land and air movement and enabling the seizure of key littoral terrain. US forces inter- and intra- theater movement, airfields, rail and road hubs, transport and strike/reconnaissance assets, advanced logistic bases and C2 facilities in the support area are all vulnerable to adversary maritime assets. Additionally, adversarial submarines provide reconnaissance for long-range fires, serve as launch platforms for cruise missiles, enable the seizure of key terrain, destroy ground-based high-value targets, and hold strategic targets at risk.

e. Space domain. A growing number of nations are developing a space presence making the space domain increasingly congested, difficult to monitor, and contested. China and Russia, in particular, have taken steps to challenge the U.S. in space. Both nations possess military doctrine describing their view of space as a critical domain to



modern warfare. China and Russia have invested heavily in space denial capabilities. They have developed an array of anti-satellite capabilities that can disrupt, deny, degrade, or destroy communications as a means to reduce US military effectiveness. The Global Positioning System (GPS) that provides Precision Navigation and Timing (PNT) data once exclusive to the U.S. and its Allies is now at risk to both Chinese and Russian interference, spoofing, and jamming. Additionally, both adversaries have developed competing PNT networks for their own use. Iran and North Korea also pose a challenge to space-based enabled services, as each has demonstrated jamming capabilities and maintained independent space launch capabilities. The advantage the U.S. holds in space, and its perceived dependence on it, will drive actors to improve their abilities to access while seeking ways to deny US forces space access. Any conflict in space will also pose a threat to the commercial and civil space sectors making an all-out space war unlikely.

f. Cyberspace and the electromagnetic spectrum.

(1) Access to or control of cyberspace and the EMS is critical to operating effectively in the future OE. Friendly forces will conduct multi-domain operations in large-scale combat operations against highly capable peer adversaries employing cyber. As part of implementing robotic and autonomous systems (RAS) into formations, the cyber threat to undermine, degrade, or attrite RAS must be considered. To facilitate speed and agility for cyberspace operations, decision-making processes, investments, and operational concepts, aligned forces must ensure every process—from target system analysis to battle damage assessment—aligns to the cyberspace operational environment. Future adversaries will seek to disrupt and degrade the Army and its unified action partners through a variety of cyberspace activities, and control the EMS. Cyberspace technology allows adversaries to stage attacks across several commercial and military applications and can have physical effects or affect the IE, sowing fear and doubt while engendering support for military objectives.

(2) Adversaries understand that cyberspace provides global reach and is embedded across all physical domains with multiple access and transition points that can be exploited. Adversaries will work to identify and attack these critical linkages and seams attacking the confidence, integrity, and access to data, ultimately inducing latency in C2 systems, and in sowing doubt and confusion in the cognitive and moral dimensions. EMS activities are similar to those activities in cyber, but they are particularly effective against over-the-air and space-based communication systems. China and Russia have made significant investments in EW capabilities that enable communications jamming, electromagnetic deception, probing, intrusion, and direction-finding of both terrestrial and space-based communication systems. EW capabilities are core to China's "Intelligentized Warfare" and Russia's "Information Confrontation" battlefield concepts. Each view operational success as dependent on the ability to control the IE to either stall attacks, win the narrative in competition, or consolidate gains.

g. Information Environment. China and Russia view the IE as a key element in competition and conflict. Social media, the 24-hour news cycle, and increased use of psychographic profiles supports targeting of at the individual level of resolution. This level of targeting is because of ease of access to, and a deeper understanding of, a person's beliefs, as well as a perceived degree of personal empowerment. These tailored messages are used in competition and conflict as powerful tools to influence individuals and groups, contributing to the consolidation of gains. Both China

and Russia have a large number of people and organizations to shape and control the IE. Examples of these capabilities include China's "50 cent trolls", and Russia's Internet Research Agency, both actively promoting false narratives and viciously attacking dissenting views.

2-6. Vulnerabilities and weaknesses

a. China. China's most significant weakness is its lack of operational experience, having fought its last large-scale conflict in 1979. Other challenges China faces are growing pains from rapid modernization, and cultural issues hindering personnel reforms. By Beijing's own admission, China's technological fielding problems will persist to 2035, its end-date for its directed modernization. Until that time, China will use a wide and varying array of technologies and tactics in its discovery efforts. Insufficient overseas and combat experience will also hinder the People's Liberation Army's (PLA) understanding of the difficulties associated with armed conflict. Additionally, China's ideology and culture stifle professional military thinking and tend to marginalize junior leaders and soldiers, which has resulted in a broadening generation gap between senior leaders and subordinates. Additionally, lack of night training, poor quality of recruits, mediocre mental and physical health, and lack of professionalism in the lower ranks creates weaknesses that detract from the PLA Army's (PLAA) ability to thrive in a rapidly changing OE.

b. Russia. Russia's economic struggles will make its modernization efforts difficult and uneven. The "New Look" modernization effort that began in 2008 has essentially created two militaries. On one hand they field an elite force capable of conducting rapid, complex operations with generally modern equipment. The other must rely upon conscription, mass mobilization, and mixed levels of modern equipment. Also, Russia has not demonstrated the ability to perform joint fires coordination, nor have they exercised the multi-domain integration of automated C2. The strategic mobility of the Russian military beyond its near abroad is limited. Combat support and combat service support capabilities continue to lag with the dissolution of some maintenance and logistics units. Finally, Russia is at a distinct disadvantage when it comes to developing their noncommissioned officer corps and recruiting highly skilled personnel.

2-7. Implications of the operational environment

The description of the OE above leads to the following analysis of implications to the Army:

a. US dominance in the future OE is decreasing. The Army will have to man, train, and equip for adversaries that will challenge US forces access to all domains and environments, including peer adversaries that will have capabilities able to contest US forces in all domains with increasing effectiveness.

b. The Army can no longer assume technological overmatch against future capable and elusive adversaries that will employ advanced capabilities in all domains.

c. The Army will increasingly encounter less freedom of action across the competition continuum as adversaries seek to extend their A2/AD zones, increasing detection ranges and increasing lethality.

d. The Army will have to seek and develop ways to improve CEMA and EMS capabilities at all echelons while increasing the resilience of its command, control, communications, computers, intelligence, surveillance, and reconnaissance systems as adversaries increase their capabilities to target, spoof, jam, and obfuscate these environments.

e. The Army will have to prepare for increasing global operational complexity, including facing adversaries who are increasingly adept at operating in all domains and environments, leveraging the criticality of the IE, especially in the regions surrounding their homelands, or their near-abroad.

f. The Army will have to develop doctrine and training to enable it to win in all domains and environments, especially in competition. Complementing allied and partnered efforts in competition must be considered.

g. The Army must actively develop and operationalize the JADC2 to preclude the effective isolation of critical warfighting functional capabilities required to gain overmatch against future adversaries.⁷

Chapter 3

Military Problem and Components of the Solution

3-1. Military problem

How will future Army forces achieve positions of relative advantage against peer adversaries and regional competitors capable of contesting maneuver at extended distances, and challenging the U.S. in all domains, the electromagnetic spectrum, and IE for prolonged periods of time during competition and armed conflict?

3-2. Central idea

The Army, operating as part of the Joint Force, postures formations to compete with and persistently contest adversary military action. Simultaneous multi-echelon convergence of capabilities from all domains and environments to contest decisive spaces enables Army forces to maneuver to penetrate and dis-integrate the adversary's layered standoff. This maneuver generates temporary windows of superiority, and exploits those opportunities to seize the initiative, gain positions of relative advantage, and generate overmatch. The ability to compete and, if necessary, converge capabilities to provide overmatch against adversary capabilities in conflict enables Army forces to achieve tactical, operational, and strategic objectives that support the return to non-crisis competition on favorable terms.⁸

3-3. Solution synopsis

a. To accomplish the central idea, the MMDO Concept applies an operational logic that relies on posturing forces for deterrence with sufficient capability and resources in areas of strategic importance, continually developing the situation through continuous operational preparation of the environment and setting the theater in conjunction with joint and combined partners. These actions lead to continually improving our position through decisive actions against internal threats and conducting operations throughout the depth of the adversary's layered stand-off efforts to degrade

adversary integrated defense networks through convergence and maneuver within areas of strategic importance. These elements of the operational logic are described in the following paragraphs.

(1) *Posture forces for deterrence.* Posture consists of forces, footprints, and agreements. When positioning forces in areas of strategic importance, forces must array to maintain the initiative and demonstrate credible warfighting capability without prompting an unintended offensive response or risking a strategic miscalculation. Should conflict arise, forward postured forces, and the resources and capabilities to support those forces, must be in position to utilize the advantages of the defense. They must also possess the capabilities and authorities to set conditions for maneuver prior to, and during, armed conflict. The appropriate functional capabilities, authorities, and operational approach must enable the Joint Force to penetrate and dis-integrate an adversary's layered protection efforts and allow the Joint Force to conduct early operations to disrupt and delay an adversary main attack. This includes assembling and launching counter-attacks rapidly before the adversary can attain or consolidate territorial objectives. These actions must occur while forces from outside of the area of operations maneuver from strategic, operational, and tactical distances to bring the full power of the Joint Force to bear in decisive spaces to hasten the defeat or destruction of the adversary.

(2) *Continuous operational preparation of the environment.* Being capable of contesting an adversary in both competition and armed conflict requires the ability to see throughout the depth of the adversary's protection efforts to proactively anticipate and set conditions to defeat adversary actions. Understanding and swiftly responding to traditional and non-traditional indicators and warnings allows the Joint Force to alert and re-position forces for effective response, or to take actions that seize, retain, and exploit the initiative. Accounting and mapping adversary systems to the nodal level allows the Joint Force to understand and effectively attack adversary systems. This level of knowledge provides the situational understanding that enables the rapid transition to conflict. This provides critical, but fleeting, opportunities to positively adjust potential conditions for the initial period of armed conflict, bolster operational deterrence, complete systems analysis to map adversary vulnerabilities, and, if deterrence fails, enable the rapid orientation of maneuver forces to deny the adversary relative freedom of action while maintaining the ability to obtain friendly objectives.

(3) *Decisive actions against internal threats.*

(a) Presenting credible deterrence requires the Joint Force to assist host nation forces with internal defense. Swift and decisive actions against internal threats clearly convey a refusal to be coerced or paralyzed, and transfers the decision to escalate back to the adversary. The continuous preparation of the operating environment enables actions against internal threats by directly confronting an element of the adversary's warfare system (internal covert action forces) and indirectly by leveraging cognitive maneuver to gain freedom of action (aggressive information operations) in a country friendly to US interests. These direct and indirect actions maintain US options by enabling preservation of combat power and adversely affects adversary decision making by reducing its understanding of friendly movements or actions in the competition space. Credible deterrence also requires the Joint Force supporting and coordinating with inter-

organizational partners, to take swift and decisive action against threats causing instability in the area of operations throughout the competition continuum.

(b) The adversary disrupts political, economic, and social dynamics, while also disrupting public and private institutions as part of a layered standoff framework to advance its control over governments and populations and reduce the ability of the Joint Force and partners to operate. These disruptive processes are part of the adversary's layered defense mechanism. This defense mechanism is developed during competition and usually has long-lasting and complex effects that continue to disrupt Joint Force maneuver throughout armed conflict and return to competition. Stabilization activities during competition are a component of maneuver that counters the adversary's subversion efforts. In addition to security force assistance outlined above, Joint Force participation may take the form of support to civil administration activities strengthening host nation capability and resilience in areas that including rule of law, economic stability, infrastructure, governance, public education and information, and public health and welfare.

(4) *Degrade adversary integrated defense networks.* A critical objective of continuous operational preparation of the environment across all domains is locating an adversary's protection efforts in competition. These systems consisting primarily of their integrated A2/AD networks must be discovered through innovative intelligence collection efforts and an adaptive indication and warning analysis centered on understanding of adversarial behavior. This will require a constant effort to creatively "stimulate" adversary nodes in order to identify their location ("see") through all domains and capabilities. Should armed conflict occur, converging joint force capabilities to further stimulate, locate, and expose the components of the adversary's defense networks, will enable swift "Stimulate-See-Strike" combinations. These actions use accuracy and mass to disrupt, dis-integrate, or destroy adversary A2/AD capabilities. Developing situational understanding of the adversary's military system, and communicating this knowledge, causes the adversary to respond and potentially denies an ideal adversary outcome, and thus has deterrent value.

(5) *Conduct early operations to disrupt and delay the adversary's main attack.* Should the adversary launch an offensive operation, the ability to maintain a requisite degree of physical and psychological support for friendly forces preserves their combat effectiveness and ability to resist adversary actions. Preventing and impeding the adversary's progress denies his objectives, complicates his desired timeline and/or approach, and develops the situation for friendly forces while enabling a friendly forces to response. These actions prolong adversary force exposure to friendly attack and defeat in detail and preserves future options by US forces, Allies, and partners. Immediate efforts by the Joint Force, especially Army forces, to penetrate and dis-integrate the adversary's IADS and integrated fires systems allows the Joint Force commander to bring the full power of the Joint Force throughout the adversary's depth. Contact forces postured throughout the operational battlefield provide freedom of action for blunt forces to apply combat power at decisive points by enabling the maneuver of ground forces to move within direct fire ranges to win through decisive close combat.

(6) *Rapidly assemble and launch counter-attacks before the adversary can attain or consolidate territorial objectives.* The presence of forward maneuver forces, enablers, and resources with the capability to project military power rapidly into operational range of the battlefield demonstrates the resolve to defeat aggression. Forward postured forces hold adversarial

forces and territory at risk and causes the adversary to question the viability of their operational schemes. Deliberately counter-attacking the adversary's military forces and dislocating his lines of operation seizes and exploits the initiative by shattering the coherence of his military system.

b. Expanded battlefield.

(1) The modern battlefield in which Army forces maneuver has expanded such that previous battlefield geometry would be insufficient to guide Multi-Domain Maneuver. The inclusion of the competition space along the competition continuum, the inclusion of two domains that were lacking in previous battlefield frameworks, (namely space and cyberspace), and the global reach of modern weapons systems have expanded the battlefield in space, even as the information age has compressed the world in time. (See figure 3-1.).

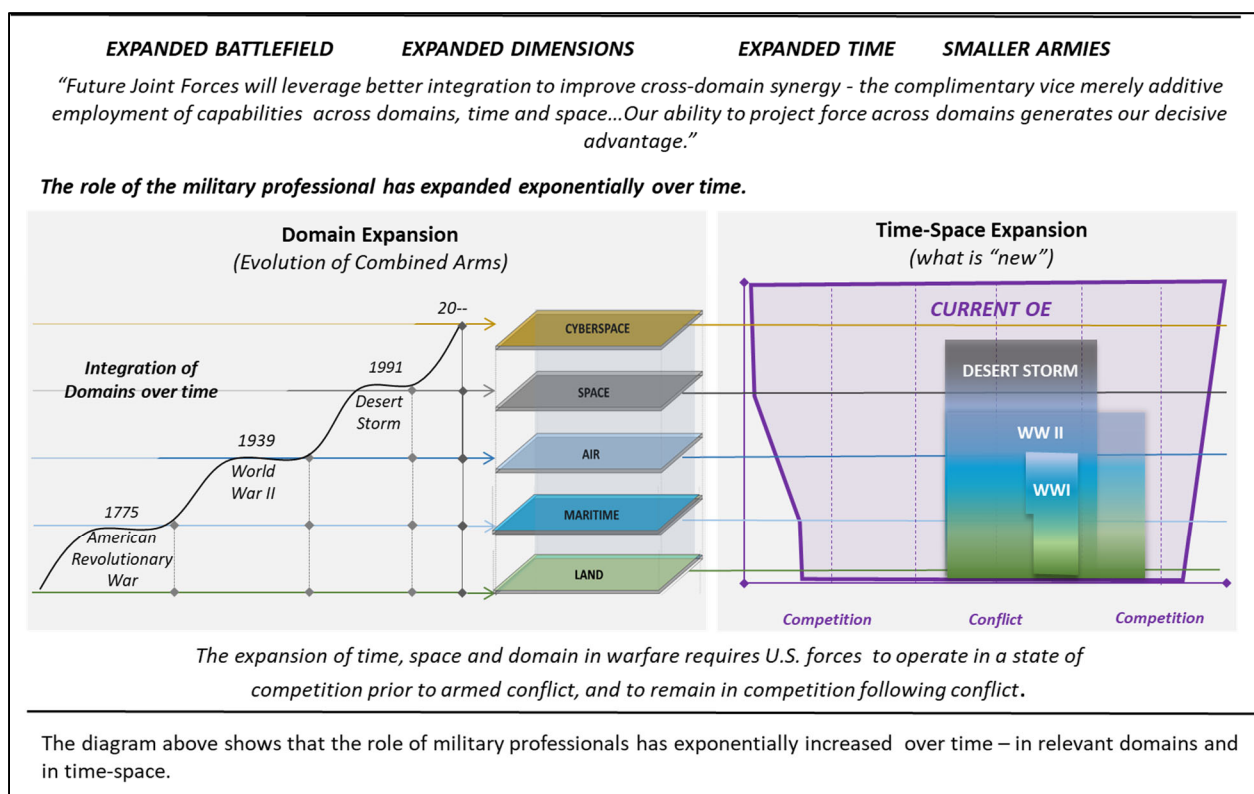


Figure 3-1. Maneuver evolution: Expanding the battlefield

(2) Due to battlefield expansion, confronting a peer adversary with multi-domain maneuver requires a new understanding of the depth and breadth of the multi-domain battlefield and an expanded battlefield framework. Depth and breadth have spatial, temporal, virtual, and cognitive aspects. The increased size of the physical space, the increased lethality, range, and speed of weapon systems, as well as, the additional virtual and cognitive spaces requires increased understanding of the battlefield. Those facets of competition and conflict combined with the fact all echelons will be in contact simultaneously demands optimization across the depth of the battlefield. To succeed in optimizing this complex battlefield, the Army must have the necessary staffs at echelon and appropriately manned in terms of numbers and talent. The increasing size

and scope of the battlefield will continue to evolve and challenge Army leaders to optimize the battlefield to achieve tactical, operational, and strategic objectives. (See figure 3-2.).

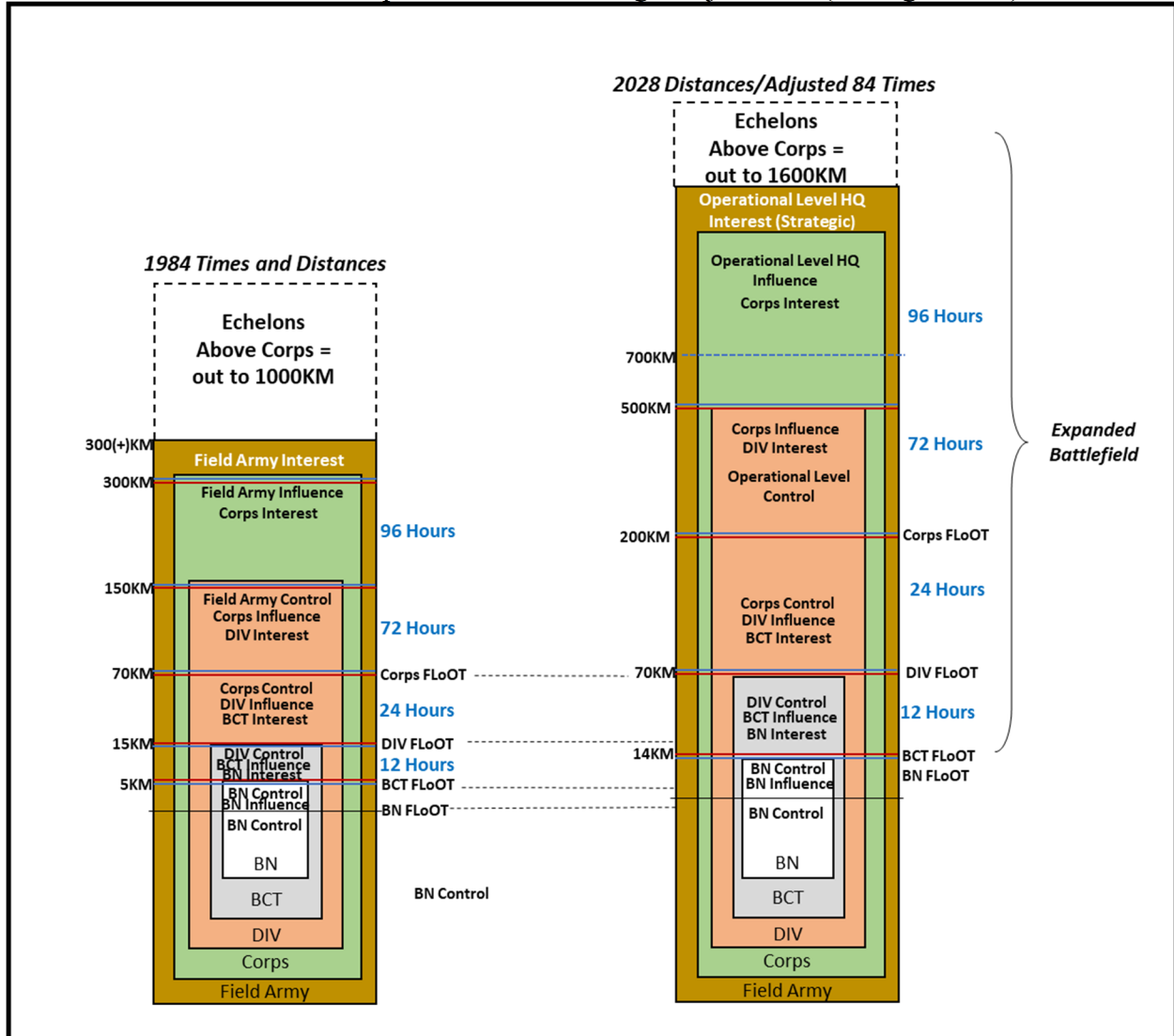


Figure 3-2. Historical time and distance comparison

(3) The expanded battlefield and the lethality of the five domain fight present a significant time distance problem for maneuvering forces. Forces must remain distributed to survive and to develop penetration opportunities to exploit throughout large areas of operation with anticipated low force densities. Army forces leverage gains made in the virtual and cognitive environments to aid in the control of decisive spaces. However, Army forces must mass rapidly to sustain ground penetrations, seize the initiative, and establish a tempo overwhelming the adversary to achieve their tactical and operational objectives. Overcoming this time distance dilemma requires echeloned maneuver where higher echelons control forces not in contact to ensure they can move rapidly to points of penetration or exploit penetrations. In this regard, it is possible the MDO maneuver fight will change the ratio of what constitutes an adequate reserve at the corps and division.⁹

c. Maneuver.

(1) Maneuver is the employment of forces in combination with lethal and nonlethal effects across multiple domains, the EMS, and the IE to achieve a position of relative advantage, destroy or defeat adversary forces, control land areas and resources, and protect populations. Today, multiple near-peer adversaries possess the capability to sense, observe, and employ effects across all domains and environments against U.S. formations in a persistent manner across the multi-domain operational framework and throughout the competition continuum. There is no physical sanctuary in a theater of operations or the homeland. Army forces maneuver across domains by employing effects to achieve tactical, operational, and strategic objectives.

(2) To overcome stand-off capabilities and close within direct fire ranges to destroy adversary capabilities on the modern battlefield, maneuver in combination with converged lethal and nonlethal capabilities requires multiple echelons. These echelons must conduct simultaneous activities in depth to create opportunities for rapid exploitation. The notion of simultaneous multi-echelon convergence to support maneuver implies an effect as being applied continuously and resulting in persistent pressure on the adversary. Maintaining continuous pressure on the adversary through actions and convergence of lethal and nonlethal effects allows the Joint Force to generate temporary windows of superiority, and exploit those opportunities to seize the initiative, gain positions of relative advantage, and facilitate freedom of movement and action to accomplish mission objectives.

(3) Actions by Army forces across multiple echelons provides options to sense-and-shoot, or act against adversary vulnerabilities by layering multiple capabilities in all domains to create redundancy in kill-webs when opportunities are presented.¹⁰ The goal of this layered approach to converging effects in combination with other Army actions is to impose a tempo of lethal and nonlethal effects adversaries are unable to match. During this period of increased operational tempo, Army forces increase relative combat power across multiple domains to generate overmatch necessary to defeat adversary forces, control land areas and resources, and protect populations.

d. Convergence.

(1) Maneuver in an expanded battlefield requires strategic, operational, and tactical capabilities. These capabilities set lethal and non-lethal conditions for operations at scale enable velocity while controlling tempo and maintaining pressure on the adversary. Today, multiple echelons are essential to effective maneuver. Strategic, operational, and tactical echelons must collectively mass with accuracy across domains to achieve positions of relative advantage. Lethal and nonlethal fires achieve effects non-persistently to enable multi-domain maneuver. Multi-domain maneuver in the operating environment now demands that each echelon manage fundamentally different, but complementary problems, to enable operations. Commanders and formations at every echelon require unique functional capabilities and increased experience because of the scope and complexity of operations. In this way, each echelon contributes to the success of the whole by concentrating on a designated aspect of the fight, freeing the other echelons

to concentrate on other equally important aspects. Staffs at echelon contend with maintaining situational understanding across far more terrain, domains, and environmental factors than ever before. These conditions will require the full effort of each echelon equipped with innovative tools.

(2) Convergence is a multi-echelon activity more so than current joint combined arms. Today, echelons integrate their own operations but synchronization and integration across echelons is seldom required. Even when a higher echelon provides resources to a lower echelon, those capabilities are integrated by the supported commander or at the point of attack. However, convergence of globally tasked space assets and highly controlled cyber effects at speed, scale, and scope will require convergence of capabilities at multiple echelons against widely distributed targets in time and space to enable ground maneuver at a decisive point. In effect, this fight will require that we converge strategic, operational, and tactical assets in order to conduct even basic tactical actions in order to achieve the required speed of attack and reattack, and to maintain tempo. In that way, multiple echelons, rather than hindering convergence, are essential to achieving it at will.

(3) Confronting a peer adversary involves understanding the depth and breadth of the battlefield framework. The inclusion of new domains and environments not constrained by physics alter notions of depth and can create opportunities for multi-domain maneuver. However, with the inclusion of these new domains and environments, the complexity of maneuver increases at every echelon. Other relevant aspects of multi-domain maneuver include time, correlation of forces and means, capabilities, warfighting systems, combat ratios, and emerging capabilities. This list is not all inclusive, but indicative of the nature of modern warfare and the aspects to be considered when developing a framework or tool to determine the area of operations, area of influence, and area of interest for a unit or echelon.¹¹

(4) Ubiquitous surveillance afforded by the inclusion of non-physical domains creates an unprecedented ability to simultaneously mass effects with accuracy throughout the battlefield. These effects enable the ability to gain and retain positions of relative advantage with the assistance of virtual presence, thus expanding the complexity each echelon faces in the future. Time, distance, and depth and breadth of the battlefield are impacted by the mission, enemy, terrain, troops available (within the constraints of calibrated force posture), and civilian considerations. The MDO framework found on page eight of Annex C to TRADOC Pamphlet 525-3-1 does not create a framework different from that in the current Field Manual (FM) 3-0 *Operations*. The seven area framework within MDO further refines by subdividing areas of the current deep, close, and support areas.

(5) However, the description of the seven area framework does not adequately address the issue of physical time-distance relationships of each of those areas sufficient to distinguish them for the purpose of conducting operations at echelon (principally the measurement of cyberspace, CEMA, or space-based activities). Therefore, this concept will use the existing, broader, and better understood “deep-close-support-consolidation area” framework for simplicity. This concept will not include the subdivisions of the MDO framework because that framework does not differentiate roles, missions, tasks, and functions at echelon or enable a graphical visualization that is conducive to better describing Multi-Domain Maneuver as outlined in this concept.

(6) Wargames and other experimentation will recognize an operational-level headquarters and subordinate echelons still planning and conducting operations using a deep-close-support-consolidation area framework that expands upon those found in FM 3-0. (See figure 3-3.). The MDO framework remains a useful cognitive tool to understand strategic and theater level operations, and processes such as design, but, it remains a concept for use in experimentation until fully developed and integrated into doctrine.

(7) The MMDO Concept acknowledges the emerging operational environment and adversary capabilities by adapting the Joint Force’s current understanding of the battlefield. This concept further acknowledges adversaries have expanded the battlefield in four ways: domains, geography (space and depth), and actors, even as it compresses time. Adversaries have blurred the distinctions between actions “below armed conflict” and “conflict,” enabling the achievement of strategic objectives short of what the U.S. traditionally considers “war”. They have expanded the battlefield by making space, cyberspace, electronic warfare, and information key components of their operations, specifically seeking to isolate friendly functional capabilities at echelon. Potential adversaries have also expanded the battlefield geographically because the effects of their multi-domain capabilities are less bound by geographic and time constraints and extend the range in which formations are under “contact”. The following section considers how to apply the operating logic within the expanded battlefield context for maneuver in support of multi-domain operations.

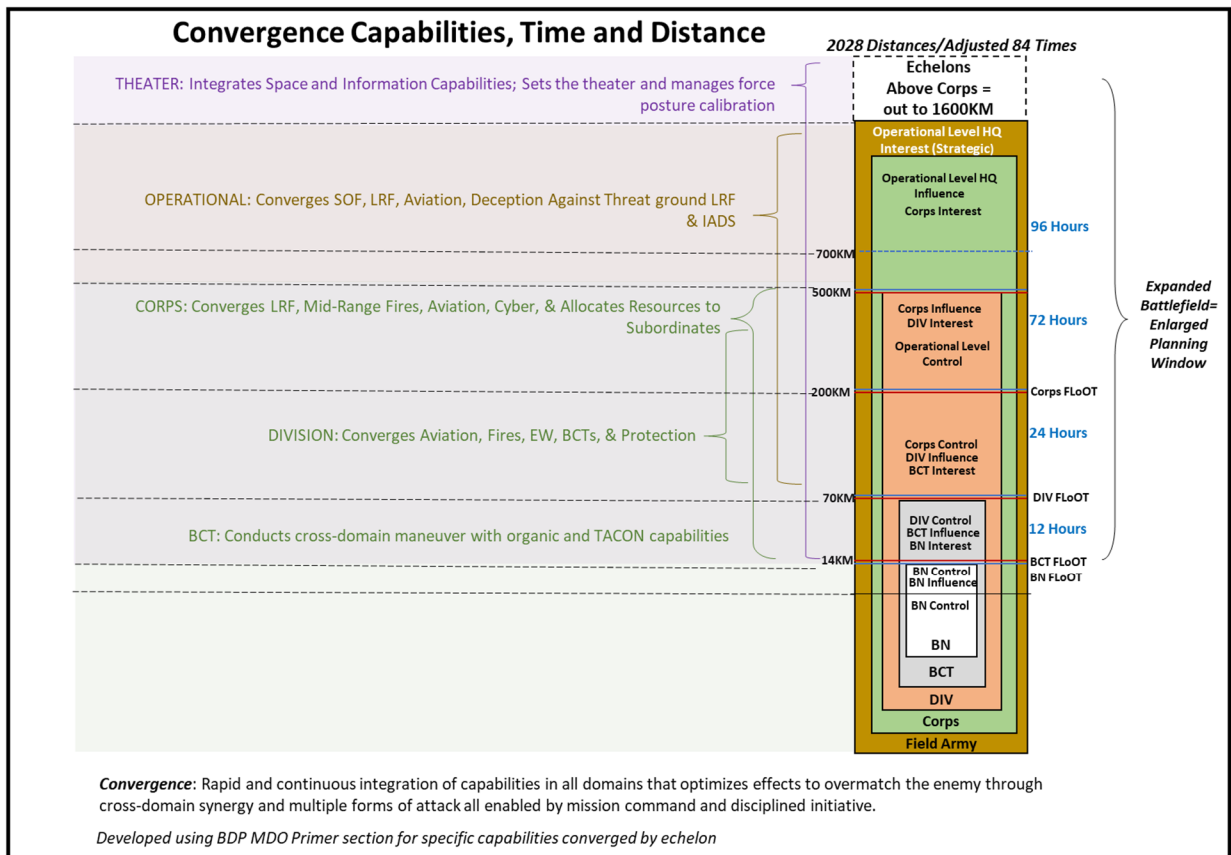


Figure 3-3. Convergence efforts by echelon example

3-4. Application of maneuver to multi-domain operations

a. Competition.

(1) The Army adjusts forward postured formations and deploys rotational forces to support the GCC security efforts and assist in the realization of defense policy goals. These goals, including but not limited to, the shaping security of environments and preventing conflict are operationalized by GCCs through strategic maneuver. Upon arrival, these formations—which either bring their equipment or draw from prepositioned stocks—are prepared to immediately compete and contest adversary military action. Additional, yet critical, benefits of forward postured and rotational formations are to demonstrate US resolve, assure partners, and deter adversaries. Movement of forces and capabilities will likely cause a reaction from the adversary. These reactions can be shaped by the U.S., its Allies, and partners to set conditions for escalation to conflict by coordinating movement and activities in non-physical domains and environments during competition. By repositioning forces into new, previously unoccupied spaces, the competitive space is expanded and provides the adversary additional factors to consider in his decision making calculus. Commanders at all echelons focus their efforts in all domains to achieve and maintain freedom of action while denying it to the adversary.

(2) Through daily operational preparation of the environment and intelligence preparation of the battlefield, operational and tactical level echelons identify key nodes and systems within the adversary military system, maintain situational awareness of adversary actions and intentions, improve defensive posture, refine target lists, and develop schemes of maneuver to facilitate offensive and defensive operations as required. Army contact and blunt forces maneuver as part of the theater campaign plan to seize positions of advantage in physical and non-physical domains to maintain freedom of maneuver and deny the same to the adversary.

b. Armed conflict.

(1) Should conflict arise, operational and tactical level commands deploy maneuver formations from forward positions while expeditionary forces maneuver from strategic distances. All echelons refine target lists and schemes of maneuver to facilitate offensive and defensive operations from strategic positions to support campaign objectives. These forces conduct echeloned maneuver, attacking adversary key nodes and systems within decisive spaces to seize and exploit the initiative by dis-integrating the coherence of the adversary's operational array of forces and dislocating his lines of operation. Army forces continue to maneuver to expand the competitive space across the theater during conflict thereby denying the adversary the ability to focus efforts on a narrow front across the five domains.

(2) Operational and corps echelons conduct simultaneous convergence of capabilities from all domains to open windows of superiority and generate overmatch for subordinate formations in decisive spaces. Convergence of capabilities by multiple echelons achieves surprise and can enable the rapid destruction of key nodes and systems. The destruction of key nodes and systems during penetration disorients and weakens adversary protective efforts while hastening the advance by tactical level maneuver formations to close with adversary formations or seize decisive terrain. Tactical maneuver forces are enabled by convergence at corps and higher level headquarters.

These actions enable aligned forces to attack from multiple locations and directions to gain positions of advantage and freedom of action through creating shock and enabling the defeat of adversarial forces in fast-paced, violent tactical battles to create strategic advantages.

(3) To seize, retain, and exploit the initiative, all echelons must sustain superior operating tempo relative to the adversary, which presents an adversary's military system with attacks from multiple domains and environments to support maneuver in which the adversary is unable to respond effectively. The critical measure of successful echeloned maneuver is not the speed with which the first maneuver formations engage, but rather the rate at which the Joint Force and its partners are able to penetrate adversary anti-access and area denial capabilities and attack into the depth of the adversary defense. Additionally, to establish and maintain sufficient tempo, engineers shape terrain, reduce obstacles, cross gaps, and establish, maintain and expand lines of communications. Thus, maintaining tempo requires operational and tactical level echelons to converge capabilities, from all domains, in decisive spaces that provide subordinate formations with the freedom of movement and action required to close with and destroy critical adversary formations, systems, and nodes.

(4) To exploit points of penetration, operational and higher-level tactical echelons enable independent maneuver by disrupting adversary forces through conducting from multiple directions and domains creating positions of advantage throughout the depth of the battlefield. Maneuvering along multiple routes, Army tactical forces and formations infiltrate, evade attacks, deceive the adversary, and reduce vulnerability to massed fires and attacks by superior maneuver forces. Dispersion and deception, coupled with continuous reconnaissance and security operations, reduces vulnerabilities and risk to the force in contested areas with layered defensive arrays. The integration of deception into operations will be vital when operating in a ubiquitous intelligence collection environment. Within this environment US forces risk detection in all domains and even social media posts can generate targetable data. Collectively, convergence of joint force capabilities and ground-based maneuver present a set of dilemmas leading to paralysis caused by the overwhelming of adversary command and control systems.

(5) Exercising command and control to enable convergence and maneuver requires a robust, secure, and resilient communications network to integrate capabilities across echelons, services, and domains. When adversary forces degrade or deny friendly communications, all levels of command must practice intent-based mission command—enabled by a culture of trust and risk — to maintain continued pressure on the adversary and recognize opportunity in the absence of orders and achieve campaign objectives.

(6) As successful maneuver creates areas where major physical and cognitive combat operations subside or cease completely, tactical and operational commands begin to consolidate gains, even while combat may continue in other parts of the AO. In these areas, maneuver begins to support stability operations and operations in the IE. Commanders must be prepared to execute transitional military authority in consolidation areas until conditions allow another authority to take the lead while tactical and operational forces transition to support roles, setting the conditions for successful transition to return to competition.

c. Return to competition.

(1) Upon achieving political and strategic objectives, strategic and operational commands focus joint force efforts to consolidate gains and secure the initiative by maintaining contact in all domains. The integration of actions in physical domains with those in non-physical domains and environments, and the highlighting of US actions and narratives in the IE will be essential to the consolidation of gains and fundamental to actions at all echelons.

(2) An all domain approach to maintaining contact, integrated with diplomatic, economic and information efforts, ensures military and political conditions remain favorable to the U.S. and its partners, while setting conditions for a return to non-crisis competition.

3-5. Components of the solution

a. Leverage operational JADC2.¹²

(1) *Exercise mission command to recognize opportunities and seize the initiative.* Future operational maneuver commanders will exercise mission command, allowing their subordinates to recognize opportunities and seize the initiative. Concurrently, Army and joint organizations will develop and disseminate multi-domain situational awareness to partners and Allies, generating shared understanding and unity of effort.

(2) *Continuous operational preparation of the environment to enable situational understanding.* Proper operational preparation of the operating environment enables identification of adversary stand-off systems and nodes, anticipation of adversary intentions, and drives daily activities to influence the operating environment (continuous “Stimulate-See-Strike (target)” activity).

(3) *Employ unified, secure, and resilient communications and computer systems to integrate capabilities across echelons and domains.* Army forces, through the employment of terrestrial, airborne, and space-based communications coupled with AI-enabled computer systems will integrate capabilities across echelons and domains. This coupling of technology and command and control will allow successive echelons to seamlessly transfer authority over forces and capabilities in response to a changing operational environment. This unified operational architecture will enable instantaneous task organization at any echelon and among units of any Service.

(4) *Manage, observe, obscure, and manipulate signatures and emissions across domains, the EMS, and the IE.* Employing sensors to see the adversary, and themselves, allows future formations to manage, observe, obscure, and manipulate their own signatures and emissions across all domains, the EMS, and the information environment to obfuscate, confuse and deceive adversary command and control systems.

b. Conduct echeloned maneuver.

(1) *Coordinate multi-domain collection and targeting across echelons at pace and tempo.* To enable Army forces to compete, deploy, and win as a component of major military campaigns

against peer adversaries demands a future force based on multi-domain formations designed to integrate functions and effects across the depth of the area of operations. Future formations must be capable of coordinating multi-domain collection and targeting activities across echelons of command at a pace and tempo that exceeds the adversary's capability to effectively respond.

(2) *Leverage operational reach of each echelon across domains.* During competition and armed conflict, four different echelons at the division level and higher must operate to fulfill distinct and complementary roles for the Joint Force. These echelons must have the necessary capabilities and authorities to see and understand, decide, shape, strike (lethally and nonlethally), and endure across the depth of the battlefield at their respective echelon, across all domains, and in dense urban and other complex environments.

(a) Tactical. Tactical echelons, defined as corps and below, execute combined arms. Tactical commanders and forces blend available capabilities dynamically whether those capabilities are organic, joint, multinational, and available from any domain with the intention to bring them against localized adversary forces or objectives. Tactical ground forces and systems generally have an effective engagement radius or maneuver range, measured in tens of kilometers.

(b) Operational. The echelon at which joint forces plan and execute combined domain operations. Operational commanders construct and manage the campaign and resourcing framework ensuring tactical forces can successfully execute combined arms operations and attain intended objectives. Operational commanders maintain sufficient reserve to be able to rapidly exploit penetration with sufficient force to seize the initiative and control tempo. Operational ground forces and systems generally have an effective engagement radius or maneuver range, measured in hundreds of kilometers.

(c) Theater. The echelon at which the whole of government blends all available elements of national (and Allied) power into a unified theater-strategic approach to defeat an adversary and achieve strategic objectives. Theater commanders construct and manage the theater-strategic approach and play an important role in shaping and sustaining alliances or coalitions. This echelon combines competition and conflict into a coherent theater strategy to achieve strategic and operational objectives. Theater forces and systems generally have ranges measured in thousands of kilometers.

(d) Global. The President develops, and DOD executes, national policy and grand strategy at the global level. Resources are determined and translated into available elements of national power. This is the level that calibrates force posture. Global forces and systems—often termed national assets—generally have global engagement or employment ranges.

(3) *Maneuver unburdened by strategic lines of communications or sustainment.* Future formations must be capable of conducting independent, distributed, echeloned maneuver within supporting indirect range and distance of each other. These actions must, first negate the effect of adversary A2/AD systems, but also, and more importantly, to move decisively into and through adversary defensive positions to attack second and third echelon formations when displacing and exploiting the dis-integration of the adversary's complex systems. Independent, distributed maneuver enables attacks from multiple directions and domains simultaneously, thus presenting

multiple dilemmas to the adversary while increasing the protection of the force. These formations must be capable of disconnecting themselves from exposed and extended lines of communications for specific periods of operation to move at a pace and tempo that the adversary cannot match without threat of culmination. Additional combat capability can be oriented on the defeat and destruction of adversary formations and capabilities when maneuver forces operate for periods of time, unburdened by the security requirements for the lines of communications.

c. Converge JIM capabilities in decisive spaces.¹³

(1) *Synchronize the simultaneous delivery of echeloned convergence to generate periods of superiority and positions of advantage.* To effectively leverage multi-domain operations in the tactical space, the specific convergence of capabilities and activities beyond the organic capabilities of the Army echelons of command are required. JIM capabilities are critical to effective competition and subsequent consolidation of gains against peer adversaries. Due to the strategic implications of the space and cyberspace domains in the homeland and the disruptive actions likely directed against our partners and allies, the convergence of effects and capabilities must be simplified and nearly seamless between echelons, across Services, and through the interagency. Operational maneuver forces will be unable to independently generate periods of superiority without the convergence of effects in the decisive spaces dependent on JIM capabilities and authorities. Further integration of these independent actions, the leveraging of anticipatory and intent-based decision cycles can support overmatch to enable friendly formations the ability to gain positions of advantage and freedom of action.

(2) *Leverage overmatch achieved in decisive spaces to maximize freedom of maneuver, seize the initiative, and accomplish mission objectives.* Operational overmatch generated across multiple echelons through the integration of JIM activities further supports freedom of maneuver allowing friendly formations to maneuver in unexpected ways, directions, and speeds to create dilemma in support of mission objectives. Converging these capabilities at echelon allows formations to seize the initiative as opportunities emerge across the different domains, the EMS, and the information environment. These opportunities, not always directly related to traditional offensive maneuver, create momentum that sets the conditions for a successful campaign and return to competition.

d. Posture, organize, and equip for decisive campaigns.

(1) *Conduct continuous, multi-domain, multi-echelon operational preparation of the environment to compete effectively at minimal cost.* During competition, the Army postures formations, and resources to compete with, and immediately contest, adversary military action in all domains, the electromagnetic spectrum, and information environment. To compete effectively with limited resources, future operational commands must conduct persistent, multi-domain, echeloned information collection, processing, exploitation, and dissemination activities (“Stimulate-See-Strike”). Corps and divisions maneuver to enable the continuous assessment of adversary maneuver formations as part of predictive intelligence efforts. These capabilities must depend on and leverage an aggressive, but limited, security cooperation plan that strengthens alliances and builds partner capacities.

(2) *Posture forces for deterrence and leverage deployment structures that facilitate flexible and decisive operations in austere and contested environments.* Unlike in earlier periods of peer adversary competition, the current strategic environment does not favor the continuous forward positioning of operational deterrence forces across multiple theaters of operation. The challenges of policy, resourcing, and competing regional security requirements force the U.S. to develop innovative ways to posture combat capabilities to assure Allies and deny adversary opportunities. The ways in which US forces are postured will require modifications on how future formations are trained, organized, and equipped to conduct continuous multi-domain operations to defeat resilient militaries of peer adversaries.

(3) *Create and employ task-organized maneuver formations at echelon.* Leveraging improvements in independent operationally capable tactical maneuver formations, future maneuver campaigns will use postured forces and advanced deployment structures to decisively enter and dominate austere and contested environments. Task organized across echelons with sufficient functional capabilities to operate independently for designated periods, these formations will leverage converged effects from across the JIM community to fight and win against any adversary.

(4) *Identify, acquire, and field capabilities that support resilient and adaptable multi-domain formations.* Essential to the success of this concept is the identification, acquisition and fielding of specific capabilities that support resilient, expeditionary, multi-domain ready formations. Stove-piped development and acquisition of advanced systems will likely result in sub-optimal convergence capabilities unfit to deliver the required effects against adversary systems. Careful and cyclical assessment of emerging modernization activities and programs support the development of multi-domain ready formations capable of delivering effects across echelons remains critical to long-term success. The previous generation of federated, single-domain, non-integrated systems must be divested and give way to active early-stage development of capabilities supporting convergence.

3-6. Conclusion

a. The MMDO Concept provides an operating logic and components of the solution to address three aspects of the operating environment that are significant to maneuver.

(1) Army forces will always be in contact and required to conduct maneuver because strategic or operational sanctuary no longer exists; this includes areas and activities conducted within the homeland. Therefore, this concept acknowledges Army forces are always required to maneuver.

(2) Adversaries have expanded the battlefield in time, domains, geography, and through multiple actors, even as time is compressed due to the cyber domain, and the speed and range of weapons systems. Therefore, this concept acknowledges that echeloned maneuver is required to contest all domains throughout the depth and breadth of the battlefield to generate overmatch in decisive spaces.

(3) Adversaries have blurred the distinctions between actions below armed conflict and conflict, enabling them to achieve strategic objectives short of war. This concept acknowledges

the need for forward-stationed forces (through permanent basing, rotational capacity, expeditionary capability, or some combination of two or more options) with sufficient resources and authorities to compete with adversaries in both physical and non-physical domains and environments. These forward-stationed forces (contact and blunt forces) are required to immediately contest adversaries.

b. During competition, the Army positions formations to compete with, and immediately contest, adversary action in all domains, the EMS, and IE. This requires the Army to posture, organize, and equip Army forces that present a credible deterrent which can conduct operations to degrade and interdict adversary influence during competition, and transition rapidly to offensive operations to support decisive campaigns during conflict. These forces operate throughout the competition continuum through while conducting operational preparation of the environment, bolstering host nation internal defense, and taking decisive action against internal threats as required.

c. In conflict, Army forces leverage operational JADC2 to converge JIM capabilities in decisive spaces and preclude adversary isolation of critical warfighting functional capabilities. These forces attack throughout the depth of the battlefield and achieve desired effects in decisive spaces by employing an echeloned approach to maneuver. Simultaneous multi-echelon convergence of capabilities from all domains in decisive spaces enables Army forces to penetrate and dis-integrate the adversary's layered A2/AD array. Army forces are able to generate temporary windows of superiority independently, exploit those opportunities to seize the initiative, gain positions of relative advantage, and generate close combat overmatch. Army forces begin to consolidate gains in areas where combat operations subside or cease altogether.

d. Upon the achievement of strategic objectives, strategic and operational commands focus joint force efforts to consolidate gains and secure the initiative by maintaining contact in all domains. As Army forces are always in contact with the adversary, and the battlefield remains expanded, the operating logic and components of the solution remain valid, even when the Joint Force returns to competition on favorable terms.

Chapter 4

Maneuver in Multi-Domain Operations and Campaigns

4-1. Introduction

The Army is prescribed by *Title 10, USC* as being “organized, trained, and equipped primarily for prompt and sustained combat incident to operations on land.” These tasks present a challenging balance of both rapid response and extended large-scale combat operations. The policy is complicated further by emerging challenges presented by global adversaries that have created a competitive environment for MDO which required changes in how maneuver operations at echelon are conducted. The increased flexibility and rapid response within an environment shaped by the possible near instantaneous effects of cyberspace operations required an expansion of competition with calibrated force posture. The integrated nature of adversary A2/AD capabilities established during competition demands our future large-scale combat formations must be multi-domain capable and able to converge capabilities effectively to enable penetration and dis-integration of

adversary systems. Simultaneously, Army forces must be able to rapidly exploit opportunities with joint partners to win multinational campaigns.

4-2. Army multi-domain operations at echelon

a. Army formations are available for GCCs to apply multi-domain capabilities against adversaries and competitors within an area of responsibility (AOR). They link joint, national, and coalition capabilities and serve as integrators for partner cooperation and interoperability within and across theaters to accomplish strategic, operational, and tactical objectives.

b. Multi-domain formations arrayed through carefully considered calibrated force posture converge capabilities across the depth and breadth of the battlefield with joint partners to link battles and engagements into successful campaigns. These campaigns are contested during competition and, if those efforts fail, won in conflict across the four levels of authority described below. Within each level, there is a complicated network of formations and authorities.

(1) *Global*. National policy and grand strategy are employed at this level. The resources are determined and translated into available elements of national power. This level supports calibrated force posture through the allocation of ready and available forces. Global forces and systems — often termed “national assets”— generally have unlimited engagement and employment ranges.

(2) *Theater*. The combatant commander, theater army, and its sister service counterparts blend all available elements of national and aligned power in a unified theater-strategic approach to defeat adversaries while achieving strategic objectives. Theater-level commanders posture, organize, and equip forces for decisive campaigns. They organize and manage the theater-strategic approach during competition and play an important role in shaping and sustaining alliances or coalitions. This level of authority also facilitates the transition to conflict by leveraging existing alliances and agreements to support the deployment and operational employment of large-scale multi-domain capable Army formations during conflict. Theater level commands create opportunities through multinational contacts for de-escalation of hostilities.

(3) *Operational*. The operational-level command and the corps support division level tactical maneuver. It protects them from attacks originating in other domains, while simultaneously waging a deep fight to set conditions for exploitation, and manages forces out of contact to ensure exploitation can be sustained and reinforced. Operational commanders organize and array the elements of the campaign and resourcing framework within which tactical forces can successfully execute combined arms operations and attain intended objectives. This is the primary level at which JACD2 is leveraged to enable forces to converge JIM capabilities in decisive spaces regardless from which of the four levels of authority the converging capabilities originate.

(4) *Tactical*. Divisions conduct echeloned independent maneuver to disrupt, and then defeat or destroy, adversary main attack formations. Tactical commanders and forces dynamically leverage available capabilities—organic, joint, multinational, from any available domain—and bring them to bear against localized adversary forces or objectives. Tactical forces are capable of penetrating or exploiting, but at lower levels will seldom be capable of both. The corps must

ensure formations are echeloned to ensure depth and agility to maintain tempo once a penetration occurs.

c. Understanding these levels of authority and respective influence on operational maneuver remains critical to the successful organization and application of formations for decisive and successful campaigns.

4-3. Maneuver at echelon during competition

a. During competition, future Army formations shape the environment and deter adversary aggression by active execution of security cooperation activities, partnership and alliance assurance activities, while presenting a credible deterrent. Extending competition requires commanders at echelon to ensure information warfare and other non-kinetic operations are integrated with maneuver and that the Army's actions in both physical and non-physical domains and environments facilitate obtaining the desired endstate. This requires commanders and their staffs to have a holistic understanding of the Army's activities in theater to ensure physical and non-physical domains and environments are consistent and mutually reinforcing.

b. Army formations use shaping activities to deter adversary's aggressive behaviors and maintain favorable conditions for competition. Future Army formations enhance deterrence during competition through overt demonstrations and posturing of forces to create positions of strategic advantage and create uncertainty while denying adversaries the ability to achieve political objectives short of a war. Continuous shaping efforts and the ability to quickly transition to conflict requires an operational focus. With the theater army often focused on its broad Title 10, Army Support to other Services, and DOD Executive Agent responsibilities across the entire theater, designated subordinate echelons, in conjunction with partners, prepare for potential armed conflict by conducting detailed analysis of critical adversary systems and posture capabilities to hold those systems at risk—overtly, covertly, or both.

c. Theater army.

(1) At the strategic level, the theater army serves as the foundation for the Army's operational presence and establishes conditions to allow freedom of maneuver within a theater. Configured with functional capabilities tailored to the respective AOR to maximize responsiveness to the combatant commander, the theater army is the principal Army organization responsible for deterring or defeating an adversary's malign influences and overt aggression within the theater. The theater army manages security cooperation and stabilization activities in coordination with the Department of State. It conducts operational preparation of the environment (physical, virtual, and cognitive) and multi-domain information collection across the theater while providing strategic linkages to national assets and resources. The theater level headquarters manages the theater and sets conditions for RSOI, specifically the reception and staging of Army forces. It also, establishes and maintains agreements for rapid information sharing and coalition response to contingencies and emergencies. The theater army also serves as the operational integration and data management node for security cooperation activities into and across JADC2 systems.

(2) In MDO, these requirements increase as the theater army security cooperation organizations and activities must routinely conduct multi-domain capability assessments with their allied and partner nations to inform future operational maneuver plans. These assessments will inform capability and effectiveness while integrating active event schedules and assessments into the JADC2 data infrastructure to inform multinational sensor and shooter coordination requirements. (See figure 4-1.).

(3) The theater army supports operational maneuver during competition by countering adversary reconnaissance, space, and information operations systems through continuous multi-source and multi-domain intelligence, reconnaissance, counterintelligence, surveillance, and security operations as part of a comprehensive operational preparation of the environment. The theater army integrates its operations in the IE with Department of State and allies through the careful synchronization of themes and messages.

(4) The theater army sets the theater through maintenance of theater pre-positioned stocks, resources, and maritime reinforcement of equipment and supplies that support regional training programs, operational force posturing, and contingency response activities. This serves to assure Allies by demonstrating long-term commitment to agreements. These activities also deter adversaries by demonstrating a forward warfighting stance and a readiness to transition rapidly to armed conflict to prevent an adversary's actions if necessary. The theater army establishes favorable conditions and conducts operational maneuver to achieve positions of advantage throughout the theater. Concurrently, the theater army sets the conditions necessary to prevail in large-scale combat operations. To facilitate a rapid response to crisis, the theater army, in coordination with other forward postured echelons, establishes and maintains critical lines of communications in concert with allies' security forces. Through partnering and the establishment of habitual relationships, agreements, and contracting structures, Army forces deter adversary conventional warfare efforts, support friendly access and freedom of movement, and maintain freedom of action in response to unexpected crises.

(5) Additionally, the theater army coordinates access and employment of capabilities available or delivered from outside the physical confines of the AOR. The theater army establishes the baseline linkage to capabilities, such as cyberspace, space, and psychological operations to meet the necessary requirements during competition and ensure that the theater can rapidly receive and integrate functional units with expanded capabilities when and where needed.

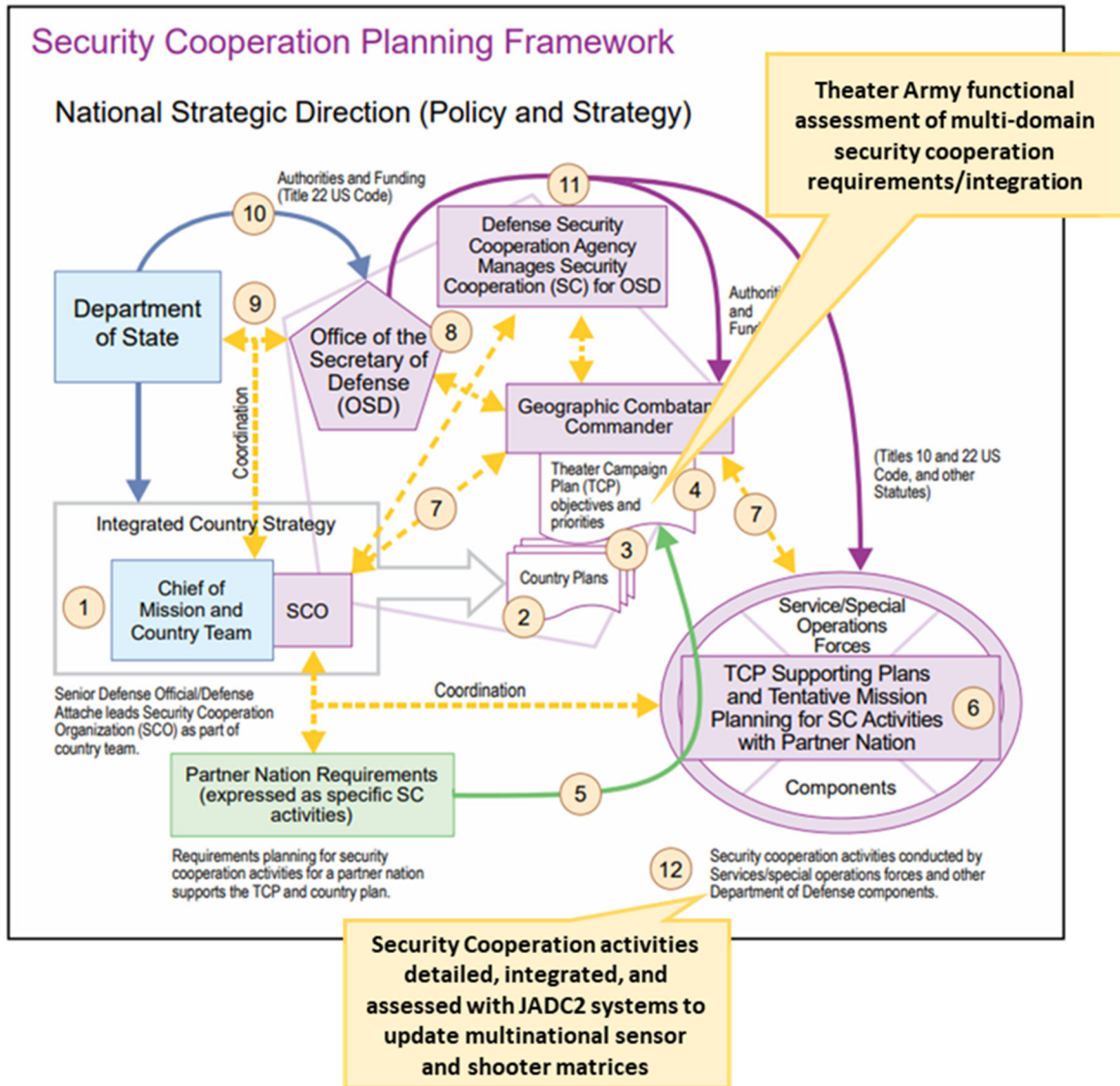


Figure 4-1. Modified security cooperation planning process (from JP 3-20)

(6) The critical change for the theater army supporting operational maneuver lies in a shift in orientation from providing Army presence in the AOR to providing functional capabilities across all domains during competition and conflict. The theater army staff structures the information flow and delivery of these effects in such a manner as to reduce the staff and cognitive burdens on the supported commands that are serving under the operational control of a Joint Task Force (JTF) or other operational level headquarters. Additionally, respective theater commands organize their systems and capabilities, in partnership with Allies and partners in such a manner as to preclude adversary “fait accompli” type operations, while expediting the arrival and delivery of combat capable friendly formations to the conflict area.

c. Operational-level command.

(1) At the operational level, an intermediate-level headquarters reduces the operational burden on the theater army and facilitates focused opposition towards a specific adversary within the larger theater AOR. The operational-level headquarters may or may not maintain a persistent presence in the designated theater of operations, but upon assignment conducts an aggressive competition campaign to counter adversary activities. The assignment of an operational-level command unencumbers the theater army and enables an integrated theater plan during competition by allowing operational training, partner engagement, and deployment activities to occur under the auspices of calibrated force posture without escalating regional tensions. Operational-level Army forces utilize dispersion, hardened facilities, deception, and multi-domain obscuration to create protected positions of advantage in time and space in which adversary forces are unwilling to engage due to the threat, real or perceived, to their own forces.

(2) The operational-level headquarters conducts a multi-domain competition campaign, manages the area of operations (AO) focused on a designated adversary, provides C2 for assigned forces, establishes and maintains connectivity for critical JADC2 capabilities, and conducts contingency planning and the intelligence preparation of the OE against the adversary. The operational-level headquarters integrates with JIM partners to help synchronize and de-conflict operations, actions, and influencing activities within the AO.

(3) An operational-level headquarters supports theater security cooperation by providing an additional echelon for partnering activities while physically, virtually, and cognitively preparing to transition rapidly to armed conflict. This headquarters engages with Allies to preserve and improve partners' abilities for self-defense, sets conditions for greater access, increases partner interoperability, and develops specific operational approaches to identified changes within their AO. Operational-level fires, intelligence, reconnaissance, and surveillance capabilities provide options to persistently monitor and create uncertainty within the adversary's risk calculus. This command also facilitates integration of activities and effects with theater level coalition Joint Operation Centers on the extended deliberate mission timelines required to support access and employment of joint capabilities. Due to the nature of peer adversaries and the presence of large numbers of coalition forces, the operational-level headquarters provides the GCC the ability to provide JADC2 for multiple US and multinational corps formations in large-scale ground combat operations.

d. Corps.

(1) If forward deployed or strategically postured within the theater, the corps supports security cooperation, military-to-military training exercises, and other engagement activities to build partnerships. If the corps is based in the continental U.S. (CONUS), the designated corps aligns staff sections and activities to develop and maintain multi-domain situational understanding of their assigned theater of operations, possibly forward deploying corps staff elements as liaisons with supported theater army elements.

(2) As tensions rise, forward-presence corps forces rapidly reposition to dispersed locations and conduct multi-domain deception operations to complicate adversary targeting and decision-making activities. The corps also serves as a forward tactical integration element for joint

capabilities, paralleling the capabilities of U.S. Air Force Multi-Domain Operations Centers (MDOC) to facilitate dispersed and resilient JADC2.

(3) The corps also serves as the integrator of multinational and allied formations as competition activities intensify during periods of tension. The ability to rapidly establish and maintain liaison, sustainment, and protection activities in support of multi-national activities allows the corps to increase the deterrent value of an allied response significantly.

e. Division.

(1) During competition, divisions assigned in theater or aligned for specific missions support subordinate BDEs and functional formations assigned to theater security cooperation activities. The divisions facilitate security force assistance in consonance with the campaign plan and gain improved situational understanding of specific theater and adversary activities. Divisions will habitually remain focused on understanding adversary's short- and medium-range weapon systems and their tactical maneuver and employment capabilities.

(2) Divisions additionally serve as a linking point for multinational and joint capabilities, as the lowest echelon headquarters with a fully functional Air Support Operations Center (ASOC) that can transition to a Joint Air-Ground Integration Cell (JAGIC) during transition to conflict. Additionally, the organization of the division allows for the receipt of multinational subordinate brigades and formations with sufficient command and control capability to integrate these systems for training and conflict tactical missions.

4-4. Maneuver at echelon during transition to combat operations.

a. During the transition to conflict, Army formations continue to oppose adversary efforts aggressively in all domains to extend escalation timelines and allow the integration of additional forces into theater. As contact forces, they take action through hybrid forms of irregular warfare to deny adversary "fait accompli" objectives, upset adversary risk calculus, and set conditions for a negotiated solution on favorable US terms. If escalatory events continue, an operational-level headquarters can transition to the role of land component command subordinate to the GCC. As the land component command, this headquarters initially deploys in-theater forces into a disaggregated defensive covering force to enable the arrival and tactical deployment of follow-on blunt forces while simultaneously initiating operations to deny the adversary freedom of action. The theater army maintains its integrated air and missile defense capabilities to provide protection and freedom of maneuver while intensifying area security operations and information environment operations to increase the population's support and prevent or weaken adversary influence.

b. Theater army.

(1) The theater army continues to monitor and conduct actions to maintain stability across the theater in all domains and opposes adversary efforts to create multiple crisis elsewhere in the AOR during transition to combat operations. It gains and maintains multi-domain situational understanding and accesses critical strategic Army functional capabilities to support theater-deployed forces. The theater army opens and maintains aerial and sea ports of debarkation,

operational dispersal areas, and lines of communications to facilitate reception, staging, onward movement, and integration (RSOI) of forces. The theater army supports efforts to counter and weaken adversary information warfare with an integrated operations in the information environment campaign. The theater army receives additional supplies from the strategic support area and prepares the theater distribution plan.

(2) Critical during this period of conflict is the supporting coordination of the theater army in aligning the delivery of functional strategic Army capabilities into the deliberate mission planning process at the theater level, especially with the MDOC. Identifying and accessing these capabilities on the behalf of arriving Army operational maneuver formations allow these effects to be more effective in conflict areas without the specific requirement for dynamic re-tasking. It also creates additional time for effects to occur in complex systems, such as cyberspace- and space-based activities, which may require more time, with necessary access and authorities, to degrade adversary capabilities.

c. Operational-level command.

(1) At the operational level, the operational-level headquarters transitions to a land component command and receives necessary joint and coalition headquarters augmentation, incorporates additional multinational units, and designates subordinate corps' AOR. This headquarters operates from protected command posts based within the geographic AOR. Command post protection and survivability is achieved through a combination of hardened and dispersed facilities, redundancy across command nodes and echelons, highly mobile command nodes (including the mobile command group), physical and electronic signature reduction or obscuration, and multi-domain deception. Similarly, critical communications nodes and other infrastructure, resources, and equipment must be hardened, hidden, redundant, and, where possible, highly mobile. This headquarters coordinates with the theater army to open and maintain ground and air lines of communications to support rapid movement of blunt forces into the operational support area.

(2) The operational-level command gains multi-domain situational understanding in coordination with the theater army during this period, specifically developing a multi-domain and information environment construct and supporting authorities to facilitate the targeted employment of cross-domain capabilities within the joint operational area.

d. Corps.

(1) The corps coordinates space effects to disrupt satellite communications to compound organic EW effects against key C2 nodes to degrade adversary PNT. The corps utilizes an array of interconnected sensors—artillery delivered, unmanned aircraft systems (UAS), and infiltrated—that place adversary systems at risk. Through persistent active surveillance, adversary systems are either actively exposed, forced to reposition, or stimulated to engage. The corps employs its operational fires command to destroy targets revealed in the corps AO.

(2) The corps shapes the lower operational and upper tactical environments, while conducting onward movement and integration of its subordinate divisions as combat power builds. The corps

is the primary integrator and synchronizer of multi-domain capability in the forward conflict area and arrays assigned capabilities to defeat adversary systems and enable tactical maneuver. As units move to initial staging positions, the corps ensures subordinate units are dispersed and in the best positions of protected operational positions to support maneuver. The corps also supports the early phase deployment of joint and multinational SOF by providing operational suppression of adversary sensor systems and capabilities.

(3) During this period, the corps specifically coordinates the array of formations transiting forward from reception points to most rapidly support a transition to offensive maneuver operations and enable joint shaping activities. Whereas in the past, time phased force deployment data schedules would orient on the early delivery of protection and sustainment capabilities to support the arrival of multi-functional formations forward in the combat theater, future multi-domain environments will require focused inclusion of cross-domain sensors and effectors, capable of supporting joint shaping activities early in campaigns.

e. Division.

(1) The division, in conjunction with joint air forces, deploys multiple air and ground deception platforms to stimulate the adversary's air defense and integrated fires complex systems to generate plausible targetable indicators for threat detection. Simultaneously, forward positioned division EW systems use targeting to shape adversary detection capabilities to enhance deception effects. Division lethal fires assets are distributed in the forward covering force security zone and converge fires on adversary tactical air defense and fires complex locations as they are located. Divisions employ air and missile defense capabilities to protect maneuver forces by destroying and degrading adversary rotary wing, fixed wing unmanned aircraft, and by conducting counter-rocket, artillery, and missile defense to neutralize adversary ISR and ground attack capabilities..

(2) During transition to conflict periods, divisions formalize linkages between JIM partners, deploy combat and functional capabilities forward into the joint operational area, and purposefully disperse and distribute cross-domain capabilities and ground formations to preclude effective adversary targeting. Divisions employ information protection, operations security, and military deception to dis-integrate adversary target acquisition and intelligence gathering while protecting their own intelligence and information systems.

(3) The change from previous combat operations and habitual operational techniques is that future combat operations against peer adversaries will require divisions to operate piecemeal into the conflict area and immediately integrate functions across multiple domains to deny adversary freedom of maneuver and support the application of joint capabilities. Similar to special operations forces, the division operates inside and outside the adversaries' A2/AD capabilities simultaneously.

(4) The ability to habitually build combat ready formations will likely not exist in the complex combat environments of the future, rather divisions and their associated brigades, aviation and field artillery brigades, and functional supporting formations and available resources must be capable of generating combat power immediately to disrupt adversary activities and set the

conditions for the penetration and dis-integration of adversary stand-off capabilities. The division also provides the critical forward link in sensor chains supporting operational JADC2.

4-5. Maneuver at echelon during large-scale combat operations

a. Future Army formations will be manned, organized, equipped, and trained to leverage the components of decisive operational maneuver during large-scale combat operations to ensure that the U.S., Allies, and other partners meet the challenge of the multi-domain OE. The emergence of revisionist and revanchist global competitors has complicated the strategic, operational, and tactical conflict models by imposing additional complexity to activities in all domains and the IE. Peer competitors understand the immense conventional capabilities the U.S. and Allies can bring to bear provided suitable time to deploy, receive, and then position capabilities. To deny that, most future adversary campaigns will focus on denying the US Joint Force and multinational partners from access to the contested areas during the initial phases of operations. Adversaries will accomplish this first through strikes against critical command nodes and facilities, and then through contesting the deployment of blunt and follow-on surge forces into the theater of operations utilizing aggressive information operations in respective strategic support areas. (See figure 4-2.).

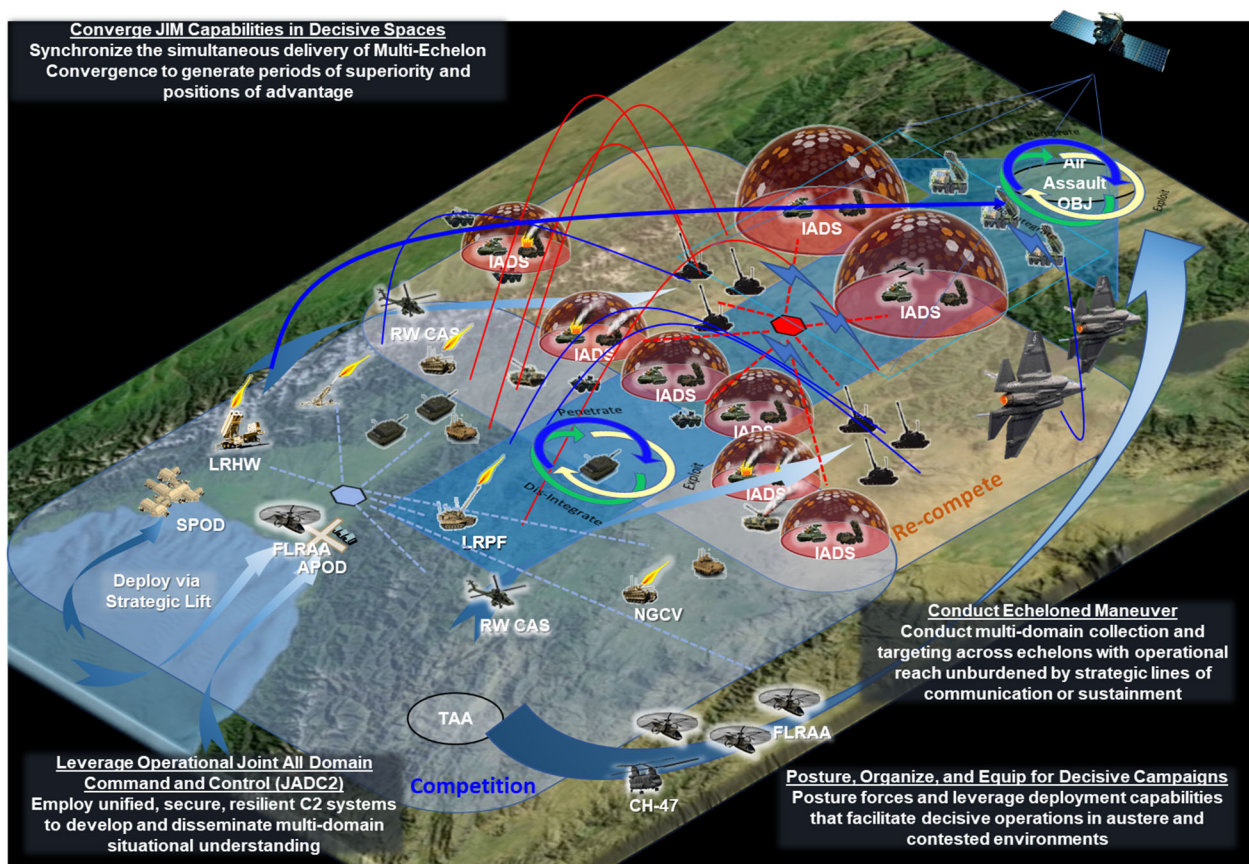


Figure 4-2. MDO maneuver in conflict

b. To conduct operational maneuver in the future MDO environment requires US formations at all echelons to understand, access, and employ capabilities across all domains and share

information seamlessly via JADC2. Future formations must move at a tempo and pace that precludes effective engagement by adversary layered standoff systems while simultaneously converging capabilities across multiple domains and environments to gain positions of advantage against the adversary. Army operations will not have the advantage of overwhelming combat power in multiple echelons to conduct deep operations, but rather, capable of only limited, small scale periods of contested superiority in tactical and operational areas that must be executed in a manner that preserves capability. Whereas in the past, correlations of forces and means consisting of three attackers to every one defender were the standard used to conduct offensive operations, these relative combat power ratios will likely not be possible for US and multinational operations, but rather successful campaigns will require friendly formations to defeat two adversary formations of equivalent size while conducting offensive operations.

c. Theater army.

(1) The theater army is challenged during large-scale combat operations by the requirement to support specific regional operations while maintaining theater-wide situational understanding and coordination requirements. Specifically tailored to account for the peculiarities of a given theater, the theater army provides Army support to the GCC.¹⁴ The theater army typically consists of a main command component, which manages Army forces, and a contingency command component that can respond immediately to regional emergencies and serve as the intermediate-level headquarters responsible for the operational level.

(2) The theater army's focus is providing and coordinating support for the operational-level headquarters while simultaneously protecting against hostile activities by a peer adversary and other malign actors in the remainder of the theater. With the operational-level command taking responsibility for the combined joint operational area (CJOA), the theater army concentrates its efforts and those of its subordinate units on securing friendly lines of communications, facilitating the flow of forces and materials into theater, contributing to the maintenance requirements of the alliance, and providing and enabling support from national technical means. The theater army provides the operational-level command with necessary linkages to interagency and host nation support.

(3) Through systematic and iterative attacks against key components of the adversary IADS, Army forces are able to open windows of opportunity for the Joint Force to begin the reduction of the adversary's integrated fires complex (IFC) threat. This, in turn, enables the operational-level command to reposition critical assets and disrupt the adversary calculus by placing adversary systems and forces at risk. As adversary forces reposition in an attempt to restore their defensive posture, friendly forces seize the initiative to further degrade the IADS and IFC systems and build momentum that ultimately leads to the failure of the overall system. Together, the operational-level command and the corps overcome long-range and mid-range systems creating opportunity for joint air and maneuver forces. As the land component command, the operational-level command coordinates the collapse of the IADS and IFC to maximize division momentum in order for them to rapidly and unexpectedly mass at decisive points or spaces against adversary ground forces.

(4) Under the protection of the supporting air and missile defense assets the theater sustainment command (TSC) is able to conduct RSOI operations for US forces arriving in theater. In addition, other assets of the theater army provide initial sustainment, medical, and maintenance support to arriving US forces, as the TSC's primary responsibility is to provide for the daily support of Army and joint forces located outside of the operational area. The theater army's subordinate sustainment and medical units also provide the intermediate headquarters with sustainment and medical capabilities to support operations in their AOR.

(5) As part of the adversary's theater-wide unconventional warfare (UW) operations, he will attempt to delay and disrupt the deployment and maneuver of Army and multi-national combat forces to prevent a direct confrontation with US forces. The theater army counters adversary UW operations by employing forces assigned to the theater army such as, SOF, engineers, chemical, biological, radiological, and nuclear forces, Military Police, the security force assistance brigade, information warfare assets, and civil affairs. Capable of independent operation, these forces will coordinate with the host nation(s) security and infrastructure apparatus to counter adversary actions against personnel, units, facilities, and lines of communications (LOCs). Additionally, they will coordinate with community and media officials to counter adversary propaganda and disinformation used in conjunction with adversary UW efforts.

(6) In addition to monitoring adversary activities theater-wide, the theater army's military intelligence (MI) units coordinate national level intelligence support for the operational headquarters. Cyber and space warfare units enable the theater army to conduct operations to defeat adversary cyberspace and space operations against the alliance as well as contribute to lethal and nonlethal fires supporting the opening of decisive spaces to enable maneuver. Finally, the theater army information warfare assets support the whole-of-government efforts to confront adversary information confrontation operations aimed at weakening the alliance.

(7) The theater army continues to focus on adversary activities outside of the CJOA as allied and joint forces look to exploit opportunities created during penetration and dis-integration operations. Part of the theater army's focus is on activities that facilitate the deployment and reception of additional forces flowing to theater. With ongoing operations throughout the rear areas to defeat adversary UW elements, maintenance of lines of communication (LOCs) throughout the theater are critical to facilitating the movement of personnel, equipment, and materiel. Theater army maneuver support and protection units conduct mobility and patrol operations to ensure that LOCs remain open. In addition, the theater army continues to provide protection support throughout the theater to prevent the disruption of supplies, maintenance, and health care for the force.

d. Operational-level command.

(1) The operational-level command is a command that provides additional capacity to a GCC with a peer adversary within its AOR. This headquarters can conduct land-based operations in competition as the land component command against adversaries on behalf of the GCC. Due to its presence, it is postured to most rapidly transition to a warfighting headquarters should conflict arise. The operational-level command has tailored capabilities and capacities determined by the

capabilities and capabilities of adversary. As the adversary's capabilities change, so do those of the operational-level command.¹⁵

(2) The operational level command's focus during armed conflict is on adversary actions occurring within the CJOA. Functioning as the JTF and/or land component command, the operational-level command is responsible for the conduct of the ground campaign against a peer adversary. Coordination with national level intelligence assets enables the operational-level command to converge space, cyber, and air with long-range precision fires systems to penetrate and dis-integrate a peer's IADS and long-range fires systems in the IFC.

(3) The operational-level command exercises operational or tactical control (OPCON or TACON) over multiple US and multinational corps or equivalent formations.¹⁶ It orchestrates the weighting of capabilities, resources and the task organization of units within these subordinate corps, and enables the divisions to maneuver to defeat adversary forces. It utilizes intelligence, fires, cyberspace, EW, and aviation assets to conduct deep maneuver to reinforce corps and division operations. The operational-level command supports the divisions through the corps in the close area with long-range fires, and coordinates for reinforcing multi-domain joint capabilities. The operational-level command maintains situational awareness through high-altitude and low-earth-orbit surveillance and an in-depth sensor network, enabled by AI and robotics and established during the competition period through persistent forward presence), to identify high payoff targets such as IADS, short-range ballistic missiles, long-range multiple rocket launchers, maneuver concentrations, sustainment, and C2.

(4) In addition to supporting the penetration and dis-integration efforts of the operational echelon's organic theater fires command assets, the operational-level command continues to develop and refine information regarding adversary operations within the CJOA and counter adversary ISR efforts. Information from these efforts helps to inform operations at the operational level – particularly sustainment operations, as the movement of ammunition and follow-on forces is critical to future operations to defeat a peer adversary.

(5) The operational-level command has sustainment and protection responsibilities for forces located within the CJOA. Key components of the sustainment effort are operations to maintain LOCs and support for U.S. Air Force's adaptive operations concept.¹⁷ Maintenance of LOCs facilitate maneuver and sustainment operations within the CJOA. Under the adaptive operations concept, American and allied aircraft operate from austere airfields within the CJOA to support ground operations. Neutralization and/or defeat of adversary unconventional operations and long-range fires by the operational-level command and its subordinate corps is crucial to prevent the disruption or delay in the flow of personnel, equipment, and logistical support within the JOA to those units that are engaging adversary forces in close combat.

(6) The operational-level command assumes specific operational responsibility for large and complex multi-domain capabilities and effects across the expanded battlefield. As demonstrated in Figure 4-3, the operational-level commander directs, supports and facilitates operations over an area of up to 384,000 square miles against a peer adversary in large-scale combat operations.

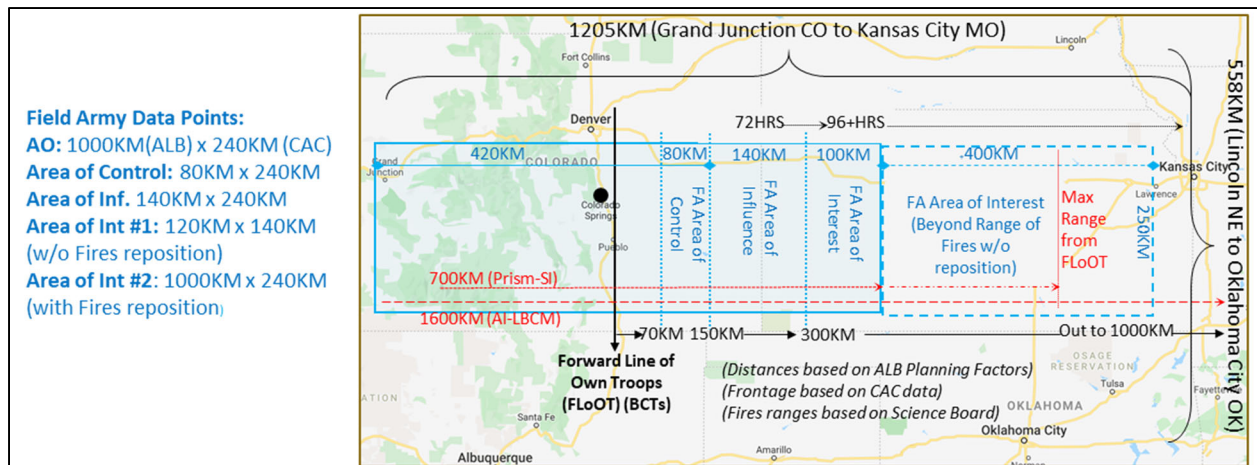


Figure 4-3. Operational-level command area data points¹⁸

e. Corps.

(1) The corps is the cornerstone of versatility and agility as it nominally serves as the senior tactical level headquarters, but in the absence of an operational-level headquarters it can, with augmentation, also fulfill the role of an operational-level headquarters. It consists of a main command component, optimized to be the senior tactical headquarters during large-scale combat operations, and an expeditionary command component that can act in an operational role during limited contingency operations that exceed the theater army's capacity in duration or scale. Additionally, the corps retains and improves its capability to perform the role of JTF in limited contingencies.

(2) The corps maintains a distributed posture and utilizes all domain resources available (air, missile, cyberspace, space, EW, UAS swarms, deception, and others) to maintain continuous pressure on both the IADS and indirect fire networks so they are disrupted and collapse as forward adversary forces attempt to reposition rearward. The corps' operational fires command, distributed behind or forward positioned within a division's AO, engages known adversary positions in the deep area. Setting conditions for maneuver, the corps employs subordinate divisions to maneuver to gain positional advantage and seize or clear key terrain in a manner that accelerates the collapse of the adversary's IADS and IFC.

(3) In its role as the senior tactical headquarters, the corps is responsible for employing enabling capabilities, such as cyberspace and space, from attached or assigned resources. Employing these enabling capabilities allows assigned combat forces to successfully engage and defeat adversary forces in close combat. It allocates resources as required from assigned and/or attached units, inter-organizational partners, and multinational allies that enable successful engagements with adversary forces. This includes aggregating intelligence resources, using the intelligence process, to enable its forces, to see, understand, decide, and engage. It also includes combining inter-organizational capabilities in corps support areas to reduce the need to divert combat power for rear area operations.

(4) The corps' responsibility for sustainment and protection of the alliance's tactical formations continues to be crucial to the success of operations against a peer adversary. To follow

up success obtained in isolating the lead elements of the attacking adversary force, the corps' needs to be able to receive and then facilitate the timely onward movement of the U.S. Army's blunt and surge forces in order to exploit advantages gained by U.S., allied, and partner forces. To enable continued success, the corps must provide its units the necessary support to conduct operations against a peer adversary that result in a return by adversary forces to adversary territory and their assumption of a less threatening posture.

(5) The corps' AO and responsibility, while substantially reduced from operational-level commands, still extends up to 500 km deep, and includes multiple echelons of tactical and operational-level adversarial capabilities. Figure 4-4. highlights how a corps operates across more than 60,000 km² during large-scale combat operations.

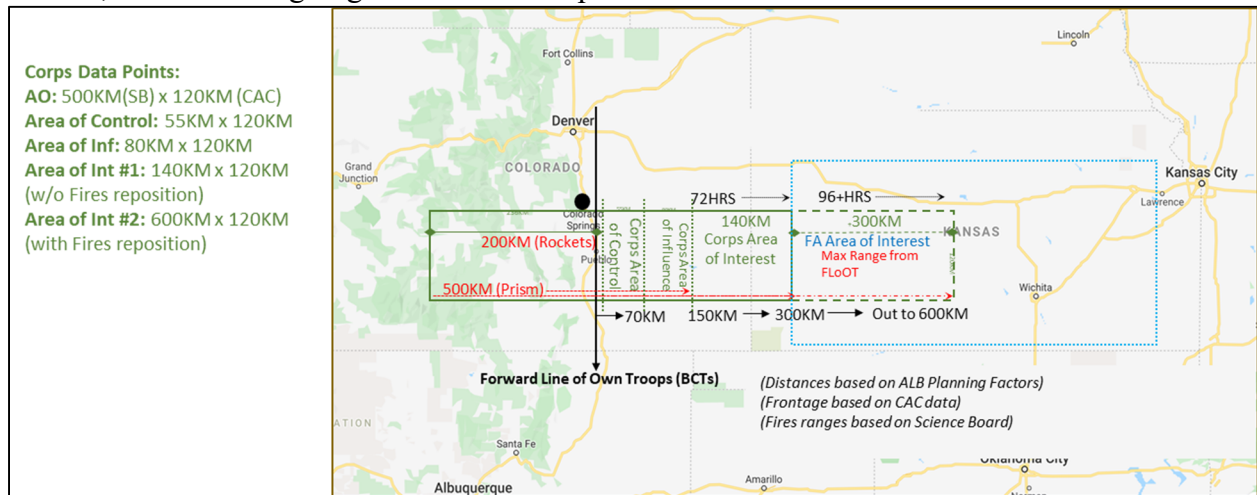


Figure 4-4. Corps area data points

f. Division.

(1) The division is a tactical headquarters that conducts maneuver and commands multiple BDEs and enablers, dominating the close fight by leveraging converged multi-domain effects. Divisions maintain a distributed posture to avoid presenting themselves as high-payoff targets. Though their organic fires systems (artillery and mortars) are dispersed, they are integrated through a protected, anti-jam mesh network to converge fires from multiple locations against adversary tactical forces. As joint and combined air capabilities begin to strike deep operational targets, divisions simultaneously target known positions in the close area and utilize forward-looking radar to quickly identify points of origin to suppress adversary fires systems revealed in response to corps fires. Divisions employ their aviation along with obscuration, false signal generation, and physical decoys to deceive the adversary by, for example, making it appear that friendly forces are massing for a ground penetration. As adversary forces respond by fire or attempt to reposition, divisions seize the initiative and employ fires against revealed adversary forces. As divisions gain greater freedom to maneuver, the corps may employ them to conduct ground maneuver to penetrate, envelop, or turn adversary maneuver forces to defeat key system nodes or disrupt critical pathways of the adversary's IADS and IFC.

(2). Divisional formations maneuver from their protected positions of advantage varying their tempo and dispersion. They concentrate fires from disaggregated locations to strike the adversary.

When conditions are set, subordinate BDEs mass from dispersed locations on multiple axis to defeat opposing adversary forces in swift close maneuver, then quickly disperse, and maneuver to subsequent objectives. They engage throughout all domains to gain overmatch and isolate, dislocate, dis-integrate, or destroy adversary forces. Divisions may at times be required to conduct defensive operations during large-scale combat operations (LSCO). Defensive tasks are conducted to defeat adversary attacks, gain time, economize forces, and develop conditions favorable to resume offensive operations. Defensive tasks are most likely executed during the transition periods to and from armed conflict. Adjacent unit coordination is necessary for successful exploitation and rapid transitions from offensive to defensive operations. Divisions also conduct limited stability tasks during armed conflict in accordance with the laws of land warfare. Stability tasks become more prevalent in consolidation areas and during consolidation of gains after bypassed adversary forces are defeated.

(3) Divisions employ BDEs simultaneously to overwhelm adversary maneuver forces by continually gaining progressive positions of advantage. BDEs are configured to execute cross-domain maneuver, fires, and aviation even when temporarily isolated from higher headquarters. Despite degraded communications, brigades integrate EW, air operations, cyberspace, and offensive space control into their maneuver to gain and maintain domain windows of superiority.

(4) Multiple Army divisions will be part of the force structure required to engage and defeat the forces of peer enemies. Each division can serve in a variety of roles such as, conduct close combat, exploit, and consolidate, that vary according to its role in a calibrated force posture. Forward deployed divisions are part of the contact force. They conduct operational maneuver early to occupy decisive terrain from which to engage adversary forces in the close fight in order to deny the adversary their objectives and enable the deployment of friendly forces into the combat area. Early deploying divisions are part of the blunt force. These divisions will begin arriving within 48-72 hours of notification. These divisions will use a combination of strategic lift and pre-positioned equipment to build combat power rapidly and commence operations. Blunt force divisions will exploit the gains made by contact force divisions to defeat the adversary. Surge force divisions deploy via strategic lift and begin arriving in theater within 30 days of the commencement of armed conflict. These divisions will likely build combat power within the combined joint operations area prior to commitment. The surge force will exploit the situation created by the contact and blunt force divisions to complete the defeat of the adversary and to consolidate gains.

(5) The division provides assets to weight the BDE efforts as they engage the adversary's forces. Aviation, engineer, MI, and logistical support are all crucial to the success of the division's operations. Aviation assets will provide reconnaissance, security, and attack aviation support, as well as air assault support, air movement, and aeromedical evacuation. Engineers will provide route clearance, mobility, counter-mobility, and survivability support. MI assets will continue to develop the battlefield. Aviation and fires assets will support MI efforts with air and artillery-launched ISR and loitering munitions to stimulate radio traffic and movement to identify specific systems.

(6) The division conducts tactical operations and activities in much smaller areas of operation and interest than higher echelons but serves as the critical coordinator of high-density effects in

(1) The theater army is optimized for returning the theater to competition after armed conflict. Already optimized for operations below armed conflict, the theater army resets the theater after cessation of hostilities and establishes the return to competition on enduringly favorable terms. The theater army manages security cooperation, simultaneously protecting the delicate security situation by deterring escalation. Throughout the return to renewed competition, the theater army seeks to transition control to appropriate host-nation civil or military authority.

(2) As the conflict reaches a pivotal point, the responsibilities of the theater army take on greater impact and importance. Responsible for monitoring adversary activities theater-wide, the theater army remains vigilant to identify aggressive adversary actions elsewhere in theater that threatens to divert resources from the current fight. An additional concern are actions by other peer adversaries, not initially involved in the conflict, taken individually or in concert with the primary peer adversary, which may affect theater operations. As the theater is reliant on the transportation hubs to enable the reinforcement and sustainment of Army forces by strategic lift, the protection and maintenance of aerial and seaports remains a critical mission for the theater army. The theater army's air and missile defense assets continue to defend these key sites.

(3) The theater army anticipates and requests additional combat forces, resources, and functional capabilities and plans the mechanisms required to move those capabilities into and out of theater and regenerate forces. Critical to the consolidation of gains are consolidating activities, which result in the establishment of transitional military authority and transitioning to civil authority. The theater army is the echelon responsible for establishing both. During the final phases of consolidating gains, the theater army retrogrades equipment, closes the joint area of operations, plans and coordinates the redeployment of Army forces, and revises its long-term security cooperation plan for the new post-conflict security environment.

(4) U.S. forces continue deployment to theater and conduct RSOI operations utilizing port facilities. During this portion of the conflict, the third Army division completes its arrival in theater. Equally crucial at this point in the conflict is the theater army's role in providing sustainment support to theater operations, which may include support for humanitarian relief operations. In addition to providing forces to maintain and secure theater LOCs, the theater army also coordinates with national governments and international partners to meet theater requirements. This includes coordinating area protection from remaining adversary unconventional warfare assets not eliminated or neutralized.

d. Operational-level command.

(1) The operational-level command is primarily responsible for orchestrating the consolidation of gains while there is still a significant threat of violence. From the outset of a campaign, the operational-level headquarters plans, coordinates, and continually adjusts the conditions for a return to competition below armed conflict on more favorable terms. The goal of the operational-level headquarters is to immediately reinforce and secure positions of advantage across all domains and quickly reorient to a competitive posture against any residual threat. A corps assumes responsibility for consolidation of gains across the battlefield as the level of violence subsides and the number of committed friendly forces in the battlefield lessens to a corps or less.

(2) The operational-level command may be required to act as a transitional military authority and control large-scale security force assistance activities to include restructuring of host-nation forces. The operational-level headquarters maintains the necessary formations and other capabilities to provide credible deterrence and ensures the ability to quickly respond to escalation within the AO.

e. Corps.

(1) The focus of operations shifts to the corps as violence subsides during the consolidation of gains. The corps initially conducts the deliberate planning and preparation to consolidate gains following the tactical success of its subordinate divisions. While eventually divisions and, at the completion of large scale combat, all Army units conduct activities to consolidate gains, the corps is responsible for overall planning, preparation, execution, and assessment to allow divisions to remain focused on retaining the initiative and maneuvering without loss of momentum. Consolidation of gains are those activities that, combined, make temporary tactical successes enduring; therefore, winning the close fight—tactical success—is of first importance. However, the tactical success will have been in vain without full and continuous consideration to the consolidation of operational and strategic gains. The corps continually reorganizes its AO as appropriate to facilitate best rapid consolidation of gains. Activities to consolidate gains require a balance between security and stability tasks as well as influencing key audiences to support coalition and host nation political and security forces operating in the AO.

(2) The corps, with augmentation, may transition to a JTF designed to coordinate JIM partners and activities to begin extensive reconstruction and restore essential services. The corps may be required to remain in the theater for a significant period of time to ensure stability while retaining the capability to renew offensive operations rapidly should hostilities resume.

(3) With the close fight at a critical juncture, sustainment of the tactical fight is the corps' highest priority. The adequacy of support to ensure success in the form of personnel, equipment, and supplies cannot be understated. The corps and its subordinate units maintain, protect, and secure LOCs with dedicated assets, masked by obscurity and deception operations to ensure survivability.

f. Division.

(1) As part of its singular focus on winning the close fight, the division concentrates first on consolidation versus consolidating gains following tactical success. Consolidation is the tactical first step to consolidating gains, which is the organizing, and strengthening a newly captured position so that it can be used against the adversary. The division seeks to establish immediate security to eliminate pockets of resistance and protect lines of communications. It positions its subordinate BDEs in a hasty defense, blocking potential adversary counterattacks. It presses forward with reconnaissance and prepares to continue offensive operations or, if necessary transition to another mission. With more time, the division commits combat forces to defeat remnants of bypassed adversary forces before they can reorganize for a counterattack. During close combat, divisions conduct the minimum-essential stability tasks of providing civil security,

food, water, shelter, and medical treatment. When directed and provided more forces and other appropriate resources, the division can organize a consolidation area and plan and conduct longer-term stability tasks as a second priority. The corps may task a follow-and-support division to C2 the corps' consolidation area as it grows in size during the campaign.

(2) Deployed divisions remain forward postured initially to deter armed conflict and challenge any renewed adversary anti-access and aerial denial activities. Divisions conduct assigned stability tasks while remaining postured for potential armed conflict should hostilities renew. Divisions continue to support security cooperation efforts by partnering with local forces to ensure the security situation remains in the new lower level of competition, simultaneously expanding both the theater and the partner capacities. As the risk of armed conflict subsides to acceptable levels, the division repositions rearward to protected locations or, if appropriate, redeploys to CONUS.

Chapter 5

Conclusion

a. In the future OE, Army forces encounter peer adversaries in uncertain, highly competitive, and dynamic conditions during which they must be prepared to conduct the full range of military operations across the competition continuum. In this environment, Army forces must be capable of achieving positions of relative advantage against peer adversaries and regional competitors capable of contesting maneuver at extended distances and that will challenge the U.S. in all domains for prolonged periods during competition and armed conflict.

b. To succeed, the Army must be capable of positioning its formations—with the appropriate enablers and resources — to compete with and immediately contest adversary military action. It must employ the components of the solution, leverage operational JADC2, coordinate JIM capabilities to open decisive spaces, conduct echeloned maneuver, and posture, organize and equip for decisive campaigns — to penetrate and dis-integrate the adversary's layered standoff, generate temporary windows of superiority, and exploit those opportunities to seize the initiative, gain positions of relative advantage, and generate close combat overmatch. The ability to compete and if necessary, converge capabilities to provide overmatch against adversary capabilities enables Army forces to achieve tactical, operational, and strategic objectives that support the return to non-crisis competition on favorable terms through maneuver.

c. The future OE will challenge the Army's ability to compete across the entirety of the competition continuum. The need for an additional echelon to reduce the burden and augment the Army's ability to facilitate control and the convergence of capabilities to open decisive spaces during large-scale combat is well documented. With the Army being a predominately CONUS-based force, the limited number of forward-postured formations must be capable of competing, while possessing the capability to transition to armed conflict seamlessly and rapidly, if required.

d. Army formations must have the necessary capabilities to leverage operational JADC2 capabilities to operate across the depth of the battlefield at all echelons. This includes posturing,

organizing and equipping the future force so that it has the capability and capacity to deter aggression within the theater, while having the ability to conduct large-scale combat operations to defeat peer military operations. As victory favors an agile force able to quickly reinforce and task organize without loss of momentum, specifically designed future Army formations will be able to rapidly form, dissolve, and reform teams with multinational and joint partners and throughout the entire competition continuum

e. The MMDO Concept is nested and conceptually with the *U.S. Army in Multi-Domain Operations 2028* (MDO Concept) and the *Battlefield Development Plan 2019*. The MMDO Concept operationalizes the MDO Concept, proposing the notion of echeloned maneuver as the application of MDO. Together, the MDO Concept, Battlefield Development Plans, and MMDO Concept provide the foundation and underlying operational logic necessary to develop the required capabilities to achieve an Army capable of executing MDO at all Army echelons. The MMDO Concept espouses the rapid and continuous integration of multi-domain, EMS, and IE capabilities to deter and if necessary prevail during competition short of armed conflict. If deterrence fails, Army formations, combine JIM capabilities to open decisive spaces that enable the Joint Force to conduct echeloned maneuver to penetrate and dis-integrate adversary A2/AD systems. Army forces continually exploit the resulting freedom of action to defeat adversary systems and formations and consolidate gains to force a return to competition on terms more favorable to the U.S., its Allies and partners.

Appendix A

References

Section I

Required references

Army Regulations (ARs), Department of the Army (DA) Pamphlets, Army Field Manuals (FMs), Army Doctrine Publications (ADPs), Army Doctrinal Reference Publications (ADRP) and DA Forms are available at Army Publishing Directorate Home Page <http://www.usapa.army.mil>. TRADOC publications and forms are available at TRADOC Administrative Publications web site at <http://adminpubs.tradoc.army.mil>. Joint publications (JPs) are available at the Joint Electronic Library at <http://www.dtic.mil/doctrine>.

Battlefield Development Plan 2019: Field Army, Corps, and Division in Multi-Domain Operations, 2028. Available upon request through the proponent.

Battlefield Development Plan-Russia. Available upon request through the proponent.

TP 525-3-1

The U.S. Army in Multi-Domain Operations 2028

TP 525-3-8

U.S. Army Concept: Multi-Domain Combined Arms Operations at Echelons Above Brigade 2025-2045

TRADOC Pamphlet 525-92

The Operational Environment and the Changing Character of Warfare: Modernizing Adversaries

U.S. Army Training and Doctrine Command, Russian New Generation Warfare Study, July 2017. Available <https://DODtechspace.dtic.smil.mil/DODtechspace/groups/bdp-r-products>

U.S. Army Training and Doctrine Command, Unclassified Executive Summary of the Russian New Generation Warfare Study, July 2017. Available at <https://www.armyupress.army.mil/portals/7/online-publications/documents/rngw-unclassified-summary-report.pdf?ver=2020-03-25-122734-383&fbclid=IwAR0drpwvREMfnyGFKgo9ZaGzi6P00yH0JFMSQKPIWehOV1DPkld2ELU21Hk>

Section II

Related references

ADP 1

The Army

ADP 3-07

Stability

ADP 3-28
Defense Support of Civil Authorities

ADP 3-90
Offense and Defense

ADP 5-0
The Operations Process

AR 10-87
Army Commands, Army Service Component Commands, and Direct Reporting Units

AR 11-30 (28 July 1995)
Army WARTRACE Program (Obsolete)

AR 34-1
Multinational Force Interoperability

Aretz, D. (2018, March 28). Information operations in a multi-domain operations battlespace. Over the Horizon. Retrieved from <https://othjournal.com/2018/03/28/information-operations-in-a-multi-domain-operations-battlespace/>

Association of the U.S. Army News Staff. (2017, December 14). Policy, process limiting cyber effectiveness. AUSA News. Retrieved from <https://www.ausa.org/news/policy-process-limitingcyber-effectiveness>

Army Techniques Publication (ATP) 3-91
Division Operations

ATP 3-92
Corps Operations

ATP 3-93
Theater Army Operations

ATP 3-94.2
Deep Operations

Bērziņš, J. (2014, April). Russia's New Generation Warfare in Ukraine: Implications for Latvian Defense Policy. Center for Security and Strategic Research, National Defence Academy of Latvia. Retrieved from <http://www.naa.mil.lv/~media/NAA/AZPC/Publikacijas/PP%2002-2014.ashx>

Blythe, Wilson C. Jr., "A History of Operational Art", Military Review (November-December 2018), accessible online at: <https://www.armyupress.army.mil/Journals/Military-Review/English-EditionArchives/November-December-2018/Blythe-Operational-Art/>

Blythe, Wilson C. Jr., “The Conduct of War: Reemergence of Russian Military Strength Warrants Study of Soviet Operational Theory in the Interwar Era”, in *The Officer* (Winter 2015), accessible online at: http://www.nxtbook.com/ygsreprints/ROA/p49818_roa_q12015/#/66

Brewer, V. (2017, February 6). Joint and Army Experimentation Division, U.S. Army Capabilities Integration Center. Roles and Responsibilities Above Brigade in the Future Force: A White Paper. Fort Eustis, VA. Available upon request through the proponent.

Brimley, S., FitzGerald, B., and Sayler, K. (2013, September). *Game Changers: Disruptive Technology and U.S. Defense Strategy*. Center for a New American Security. Washington, DC.

Brown, R. & Perkins, D. (2017, August 18). Multi-domain battle: Tonight, tomorrow, and the future fight. *War on the Rocks*. Retrieved from <https://warontherocks.com/2017/08/multi-domainbattle-tonight-tomorrow-and-the-future-fight/>

Capstone Concept for Joint Operations (CCJO): Joint Force 2020

DA, Chief of Staff of the Army Strategic Studies Group-I. (2013, July). *Testing Assumptions about the Role of Land Power in 2030 Final Report*. Washington, DC. Available upon request through the proponent.

DOD. (2010, December 12). DOD Directive 5100.01: Functions of the Department of Defense and its Major Components. Retrieved from <http://www.dtic.mil/whs/directives/corres/dir.html>

Duggan, P. (2017, August 3). How the enemy could hit the U.S. Army at home. *War on the Rocks*. Retrieved from <https://warontherocks.com/2017/08/how-the-enemy-could-hit-the-u-s-army-at-home/>

Esper, M. (2017, December 7). Statement by the Honorable Mark T. Esper, Secretary of the Army before the Committee on Armed Services United States Senate. Washington, DC.

FM 3-0
Operations

3-13
Information Operations

FM 3-90
Offense and Defense

FM 6-0
Commander and Staff Organization and Operations

FM 3-57
Civil Affairs Operations

Gandy, C. (2017, July 20). Time is always a constraint: Transforming headquarters organization and employment for the multi-domain battle environment. Small Wars Journal. Retrieved from <http://smallwarsjournal.com/print/72549>

Ham, C. (2017, October 4). The great war echoes today: Army faces similar challenges a century later. Army Magazine. Retrieved from <https://www.ausa.org/articles/great-war-echoes-todayarmy-faces-similar-challenges-century-later>

Joint Concept for Cyberspace

Joint Concept for Integrated Campaigning

Joint Concept for Operations in the Information Environment

Joint Operational Access Concept

JP 3-0
Joint Operations

JP 3-08
Interorganizational Cooperation

JP 3-14
Space Operations

JP 3-15.1
Counter-Improvised Explosive Device Operations

JP 3-20
Security Cooperation

JP 3-31
Command and Control for Joint Land Operations

JP 3-33
Joint Task Force Headquarters

JP 5-0
Joint Planning

Macgregor, D. (2017, July 16). Why America's Army is falling apart. The National Interest. Retrieved from <http://nationalinterest.org/feature/why-americas-army-falling-apart-21546>

McCarthy, R. & Milley, M. (2017, October 3). [Memorandum]. Modernization priorities for the United States Army. Washington, DC.

McMaster, H. (2003, April 7). Crack in the Foundation: Defense Transformation and Underlying Assumption of Dominant Knowledge in Future War. U.S. Army War College Strategy Research Project. Carlisle Barracks, PA.

Milley, M. (2015, October). Winning matters: Especially in a complex world. *Army Magazine*, 65(10), 21-26.

Perkins, D. & Holmes, J. (2018, 1st Quarter). Multi-domain battle: Converging concepts toward a joint solution. *Joint Force Quarterly*, 88, pp. 54-57.

Scales, R. (2018, April 9). Forecasting the future of warfare. *War on the Rocks*. Retrieved from <https://warontherocks.com/2018/04/forecasting-the-future-of-warfare/>

Shimerdla, J. & Kort, R. (2018, May-June). Setting the theater: A definition, framework, and rationale for effective resourcing at the theater army level. *Military Review*, 98 (3), 55-62.

Simontis, N. (2017, September-October). In defense of the theater army. *Military Review*, 97 (5), 30-36.

Terry, J. (2016, January 12). Curtain's always rising for theater army. *Army Magazine*. Retrieved from <https://www.ansa.org/articles/curtain%E2%80%99s-always-rising-theater-army>

Townsend, Stephen J. "Accelerating Multi-Domain Operations: Evolution of an Idea", *Military Review* (September-October 2018) accessible online at: <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/September-October-2018/Townsend-Multi-Domain-Operations/>

TP 525-2-1

The U.S. Army Functional Concept for Intelligence

TP 525-3-3

The U.S. Army Functional Concept for Mission Command

TP 525-3-4

The U.S. Army Functional Concept for Fires

TP 525-3-5

The U.S. Army Functional Concept for Protection

TP 525-4-1

The U.S. Army Functional Concept for Sustainment

U.S. Army Training and Doctrine Command, *Russian New Generation Warfare Study*, July 2017.

von Clausewitz, C. (1975). On war. (Ed. and trans. Michael Howard and Peter Paret). NJ: Princeton University Press.

Wallace, William S. (2020, April). Multi-Domain Operations in Context. The Landpower Essay Series, (20-4). Arlington, VA: The Institute of Land Warfare, Association of the United States Army. Retrieved from <https://www.ausa.org/sites/default/files/publications/LPE-20-4-Multi-Domain-Operations-in-Context.pdf>

Wesley, Eric J. and Bates, Jon. “To Change an Army—Winning Tomorrow”, Military Review (May-June 2020), accessible online at: https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2020/Wesley-Winning-Tomorrow/fbclid/IwAR1Wxi3mWnAaq-VyTqhj74IoNB1_Di5LaZPKs3ckAYyOXnvcBJsTaTxAG6o/

Wesley, Eric J. and Simpson, Robert H. (2020, April). Expanding the Battlefield: An Important Fundamental of Multi-Domain Operations. The Land Warfare Papers, (131). Arlington, VA: The Institute of Land Warfare, Association of the United States Army. Retrieved from <https://www.ausa.org/sites/default/files/publications/LWP-131-Expanding-the-Battlefield-An-Important-Fundamental-of-Multi-Domain-Operations.pdf>

White House (The). (2017, December). National Security Strategy of the United States of America. Washington, DC: The White House. Retrieved from <https://www.whitehouse.gov/wpcontent/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>

Woods, K. & Greenwood, T. (2018, 1st Quarter). Multi-domain battle: Time for a campaign of joint experimentation. Joint Force Quarterly, 88, pp. 14-21.

Appendix B

Required Capabilities

B-1. Introduction

Maneuver required capabilities (RCs) describe capabilities needed to execute the missions under the conditions described within the MMDO. RCs identify and focus capability development. The Campaign of Learning, in collaboration with other warfighting function and domain leads, continues to inform required capabilities development.

B-2. MMDO RCs

a. Leverage operational JADC2.

(1) RC 1. Theater army, corps, and division formations require the ability to plan for, access, and employ non-organic capabilities to seize, retain, and exploit the initiative consistent with the commander’s intent in all conditions. (AOC B-2.i.; j.; k.) (MMDOC 3-5.a.(3).)

(2) RC 2. Theater army, corps, and division formations require the ability to monitor, regulate, manipulate, and obscure signatures and emissions across all domains and environments,

denying the adversary's ability to sense and target friendly forces enabling freedom of maneuver, force protection, and C2. (AOC B-2.i.; j.; m.) (MMDOC 3-5.a.(4).)

(3) RC 3. Theater army, corps, and division formations require the ability to deny adversary sensors across all domains and environments from the operational support area to the deep maneuver area to maintain surprise, exploit initiative, and control tempo. (AOC B-2.i.; j.; m.) (MMDOC 3-5.a.(4).)

(4) RC 4. Theater army, corps, and division formations require the ability to develop and disseminate multi-domain situational understanding to satisfy information requirements at a tempo the adversary is unable to match. (AOC B-2. i.) (MMDOC 3-5.a.(2).)

(5) RC 5. Corps and divisions require the ability to task-organize BDEs, functional brigades, multi-functional brigades, and commands to conduct independent maneuver at a tempo the adversary is unable to match. (AOC B-2.i.) (MMDOC 3-5.a.(1). and 3-5.d.(3).)

b. Conduct maneuver at echelon.

(1) RC 6. Corps and divisions require the ability to continuously converge lethal and nonlethal effects across multiple domains, the EMS, and IE to conduct semi-independent maneuver in all environments. (AOC B-2.c.;h.) (MMDOC 3-5.b.(1).)

(2) RC 7. Theater army, corps, and division formations require the ability to stimulate adversary systems in the land domain and the EMS to make the adversary susceptible to detection, exploitation, destruction, or neutralization. (AOC B-2.c.;h.) (MMDOC 3-5.b.(1).)

(3) RC 8. Corps and divisions require the ability to conduct persistent, all-weather, multi-domain reconnaissance and security operations to develop situational understanding, protect the force, and perform economy of force roles. (AOC b-2.j,k.) (MMDOC 3-5.b.(1).)

(4) RC 9. Corps and divisions require the ability to conduct joint entry operations, in a high A2/AD environment from strategic distances that facilitate freedom of maneuver and action. (AOC b-2.10.;11.;13) (MMDOC 3-5.b.(3). and 3-5.d.(4))

(5) RC 10. Corps and divisions require the ability to shape terrain to generate tempo and exploit positional advantage in decisive spaces. (AOC B-2.m.) (MMDOC 3-4.b.(3).)

(6). RC 11. Theater army, corps, and division formations require the ability to conduct operations at extended distances without continuous resupply during large scale combat to enable opportunistic and episodic resupply, reducing risk to mission and risk to force. (AOC B-2. e.) (MMDOC 3-5.b.(3).)

(7) RC 12. The Army requires the ability to describe a correlation of forces and means in both physical, and non-physical domains and environments to enable commander's to visualize the totality of lethal and nonlethal efforts. (AOC b-2.a.;i.;m.) (MMDOC 3-3.d.(2).)

c. Converge JIM capabilities to decisive spaces.

(1) RC 13. Corps and divisions require the ability to synchronize and employ their formations and capabilities through movement in combination with converged lethal and nonlethal capabilities across multiple domains, the EMS, and the IE to destroy or defeat adversary forces, control land areas and resources, and protect populations. (AOC B-2.j, 1.) (MMDOC 3-5.c.(2).)

(2) RC 14. Corps and divisions require the ability to converge lethal and nonlethal capabilities across multiple domains, the EMS, and the IE in dense urban terrain at all echelons to retain freedom of action and consolidate gains. (AOC B-2.g.) (MMDOC 3-5.c.(1).)

(3) RC 15. Theater army, corps, and division formations require the ability to interoperate with JIM partners supporting regional engagement to expand the competitive space, enhance regional stability, and produce sustainable outcomes. (AOC b-2.b.;c.;d.) (MMDOC 3-5.c.(1). and 3-5.d.(4).)

d. Posture, organize, and equip for decisive campaigns.

(1) RC 16. Corps and divisions require the ability to detect, identify, secure, reduce explosive and nonexplosive obstacles and hazards, breach structures, bridge gaps, and shape terrain to maintain tempo and preserve freedom of maneuver and action. (AOC B-2.k.) (MMDOC 4-5.f.(5).)

(2) RC 17. Theater army, corps, and division formations require the ability to persistently throughout the competition continuum beneath the threshold of armed conflict to maintain positions of advantage and enduring initiative. (AOC B-2.e.; i.; h.) (MMDOC 3-3.a.(3). and 3-5.d.(1).)

(3) RC 18. Theater army, corps, and division formations require the ability to respond rapidly to regional emergencies and emergent threats with sufficient capability, capacity, and endurance to return to pre-crisis or better conditions. (AOC b-2.a.) (MMDOC 3-5.d.(2).)

(4) RC 19. Corps and divisions require the ability to consolidate gains continuously to ensure lasting outcomes and a more favorable security environment within the AOR. (AOC B-2.l.) (MMDOC 4-6.a.)

(5) RC 20. Corps and divisions require the ability to create temporarily protected corridors and positions of advantage and defeat or destroy long-range adversary systems operating from the operational and strategic fires areas. (AOC B-2.j.;n.) (MMDOC 4-5.d.(2).;(3).)

Appendix C Science and Technology

C-1. Introduction

a. This appendix recommends a set of breakthrough scientific discoveries and breakthrough technological innovations that support the central idea to conduct maneuver in multi-domain operations 2028-2040 and beyond. Keys to advancing maneuver at all levels of war include extensive improvement in signature management, including obscuration and deception, maneuver-enabling technologies, and decision making enabled by technical advancements from AI, and related fields. Each breakthrough scientific discovery or breakthrough technological innovation effort links to the appendix B, B-2 MMDO RCs. Critical areas for future advancement also include network, fires, and sustainment, where details on the recommended science and technology capabilities are covered in the science and technology appendices of the other concepts in the Army Concept Framework.

b. Realizing these future capabilities requires targeted investment, extensive experimentation, and constant reassessment. These advancements will support convergence of capabilities from all domains to open decisive spaces, which will enable maneuver forces to exploit windows of superiority to achieve operational and strategic objectives and generate close combat overmatch. To achieve this, the Army must work with academic experts, joint partners, industry leaders, and key stakeholders to develop the requisite capabilities.

c. This appendix does not encompass all research within the Army Modernization Enterprise, but is intended to be only a subsection of the disruptive scientific discoveries and emerging technologies being executed by the Army to overcome technical challenges that prevent the realization of the core capability needs articulated in the MMDO Concept. This appendix will be revisited on a frequent basis to provide guidance that reflects the anticipated and evolving needs associated with conducting MDO or multi-domain maneuver to support operations, and takes advantage of potential breakthrough scientific discoveries and breakthrough technological innovations.

C-2. Emissions control and signature management

a. Corps and divisions require the ability to manage, obfuscate, and manipulate all signatures and emissions across domains, the EMS and IE. Corps and divisions require the ability to deny adversary sensors and to stimulate adversary systems across all domains and environments.

b. Breakthrough technological innovations.

(1) Research on advanced, software defined radio technology, which miniaturizes RF-system-on-a-chip provides full RF spectrum situational awareness of self-emissions and RF signature. The ability to monitor the RF signature of friendly forces from multiple distributed locations with signature visualization will enable signature management and subsequent manipulation and/or obscuration. (RC 2)

(2) Research on sensors and models for cooperative, passive sensing of self-emissions over large spatial areas through the use of heterogeneous sensing platforms, including leveraging of joint force assets, will provide continuous monitoring of RF signatures. Distributed sensing will allow for the monitoring of signatures from friendly forces over a dispersed area where adversary sensors location is unknown. (RC 2)

(3) Research in highly-conductive, anisotropic new materials within the micro- and nano-particle dimensions regions that are packable and dispersible are proving to be highly effective obscurants from the ultraviolet through microwave portions of the EMS. Obscurants will increase protection across a larger portion of the EMS for high-value assets against advancing adversary sensor technology, and enable concealment during operations. (RC 2)

(4) Research in sensitive RF detection sensors and automated detection algorithms will allow for the discovery of adversary passive RF detection systems, which lack an active signature. This capability will enable adversary systems detection and targeting when the system is not active so that it can be neutralized, destroyed, or manipulated. (RC 4)

(5) Research into reconfigurable wideband antennas, transceivers, digital signal processors, and intelligent algorithms applied to the electromagnetic environment and network and cyberspace domains that autonomously create a complex and chaotic battlefield environment will allow commanders to manage the adversary's common operating picture. This advancement will enable commanders to seize, retain, and exploit the initiative by delaying the adversary's decision making process and response time through increased chaos and uncertainty of friendly forces position and activity on the battlefield. (RC 2, RC 3, RC 4)

(6) Research into hardware and protocols for alternative communication modalities for both low probability of detection and classification will allow for secure, and resilient communications at all echelons. This advancement will enable integration of capabilities across all echelons and domains to achieve operational and strategic objectives. (RC 7)

c. Breakthrough scientific discoveries.

(1) Research in advance computing for full spectrum characterization, where sensor data from multiple sources (RF, cyberspace, acoustic, and electro-optic infrared (EO/IR) in multiple distributed areas can be captured and visualized. Multi-spectral sensing will allow for the measurement, visualization, and subsequent management of friendly signatures from multiple distributed locations. (RC 2)

(2) Research in advance integration of RF, cyberspace, acoustic, and EO/IR to enable signature generation from a variety of sources distributed in the area of operations. The ability to generate multi-spectral, decoy signatures will enable friendly forces to deceive adversary sensors and obscure friendly forces and systems. (RC 2, RC 3)

(3) Research in quantum entanglements would make it possible to "teleport" information between particles without any physical connection and could result in an aerosol that can be tuned remotely to change its electromagnetic response for increased adaptively of the countermeasure.

A tunable aerosol obscurant can be prepositioned and tailored, as conditions require, to adaptively obscure signatures from friendly systems. (RC 2)

(4) Research in the non-linear dynamics of RF circuit types in response to unconventional waveforms will provide the capability to introduce signals into hostile systems that can essentially take control of the system, with or perhaps without warning the operator, to spoof it, introduce false information, turn off, and others. Non-traditional electronic attack will deceive adversary sensors by providing faulty data and denying the adversary's ability to sense and target friendly forces. (RC 4)

(5) Research in obscurants with scalable effects will assist with countering battlefield threats that are constantly evolving. Creation of obscurant aerosols that have the ability to change effects remotely and with escalating effect (that is, obscuration, anti-personnel, lethal) will allow the commander to respond quickly to evolving battlefield threats. (RC 2)

(6) Research to discover a single material or a combination of materials that covers the entire EMS spectrum of interest that exhibits very high performance per a unit mass (to avoid unworkable logistics burden) will enable multispectral obscuration of high-value assets. This advancement will expand the capability of the Army to project screens that defeat adversary sensors and radars operating in the microwave region of the EMS in addition to EO/IR threats. (RC 2)

(7) Research in remote activation, such as quantum entanglement or nanoelectromechanical systems sensors in combination with materials that can change their physical state will enable the realization of obscurants with scalable effects that can be controlled remotely and with escalating effect (that is, obscuration, anti-personnel, lethal). This capability will allow commanders to respond quickly to constantly changing dynamics on the battlefield. (RC 2)

(8) Research into creating, maintaining, and distribution of entanglement will be the basis of future quantum networks containing among other things sensor nodes that will enable distributed quantum sensing for more advanced signature detection and time distribution. This advancement will enable sensing for more advanced signatures, including gradients and higher derivatives, to provide a much more complete picture of the underlying structure of the field patterns being "seen", enabling adversary signatures to be detected and monitored around high-value assets with unprecedented sensitivity; and clock synchronization for situational awareness, greater bandwidth communications and networking, and more robust EW capabilities. (RC 2, RC 7, RC 11)

(9) Research in atom interferometry, including creation of macroscopic quantum superposition states, ways to prolong coherence, spin squeezing, entanglement creation, and resilience of quantum states against noise and external perturbations, will lead to more sensitive and robust sensors for electric, magnetic, electromagnetic and gravitational fields on the one hand, and also enable inertial sensing required for PNT in the absence of GPS. The sensor advancements will enable both friendly and adversary signatures to be detected and monitored at unprecedented sensitivity in robust and deployable packages, enabling by mid-term improved situational awareness, and in the long term sensing orders-of-magnitude beyond what is possible from traditional sensors; while the inertial sensing will enable operation in GPS denied environments. (RC 2, RC 7, RC 12)

(10) Research into reciprocal and deterministic RF hardware and low-latency techniques and algorithms for time and phase synchronization of distributed transceivers will enable complex communication and resilient electronic warfare application of ground and air platforms to degrade adversary sensors and communications allowing for extended operations within A2/AD environments. This advancement will enable non-kinetic offensive EW options for commanders to shape the adversary's information environment, potentially leading to windows of opportunity. (RC 2, RC 3, RC 4)

(11) Research into adversary-agnostic electronic warfare support (ES) algorithms that identify transmitters and receivers based on intrinsic hardware characteristics and cognitive EA algorithms and concepts of employment will enable adversaries to be addressed with no a priori information or intelligence. This advancement will enable electronic attacks that will learn through feedback from damage indicators and converge in real-time to more optimal attacks for new threats on the battlefield. (RC 2, RC 3, RC 4)

(12) Development of high-fidelity modeling, simulation, and emulation technologies to enable research and demonstration of real-time cognitive electronic warfare (EW) concepts and techniques in complex, highly-realistic electromagnetic environments. This advancement will reduce the time of EW research and development, leading to resilient, adversary-agnostic EW capabilities. (RC 2, RC 3, RC 4)

(13) Nanoparticles of various sizes, shapes, and surface roughness can be engineered, and metamaterials can be designed that enable selective obscuration at select frequencies/wavelengths, or for cloaking of objects. This innovation will enable the manipulation and obscuration of signatures and emissions of future formations to confuse and deceive adversary C2 systems and support freedom of movement and action. (RC 2, RC 3)

C-3. Maneuver at echelons

a. Corps and divisions require the ability to plan for, access, and employ non-organic capability enabled through multi-domain situational understanding to continuously converge lethal and nonlethal effects across multiple domains, the EMS, and information environment. Corps and divisions require the ability to maneuver in and shape terrain to maintain tempo and preserve freedom of maneuver and action.

b. Breakthrough technological innovations. Research to develop a physics-based and data-driven tool for aircraft design for extreme performance attributes, assessment of a design concept, and evaluation of technology impact on the design trade space will enable unprecedented capability in future UAS. This research will enable the realization of UAS capable of high speed, nap of the earth flight for information collection applications such as deep sensing and ISR. (RC1, RC7, RC8, RC12)

c. Breakthrough scientific discoveries.

(1) Research to determine the spatial relationship, inherent material characteristic and imparted features such as evapotranspiration will allow for understanding of how natural surfaces affect flows in complex terrain. These advancements will enable the ability to define and shape terrain on both sides of a wet-gap crossing increasing freedom of maneuver and action. (RC 10, RC 14)

(2) Research into the use of entangled photons in quantum imaging and quantum illumination will improve resolution, provide the possibility of imaging through obscurants, enable “seeing” in a different frequency domain than the probe light, and enable stealth by using a different photon to image than is used to illuminate the source. This advancement will enable “seeing” more and “seeing” better, such as in obscured environments having smoke, sand, fog, smog, or deliberate obscurants, thereby increasing the corps and division’s ability to identify and subsequently destroy or defeat adversary forces, potentially without being seen in the process. (RC 7, RC 8)

(3) Research on the use of swarms for collaborative/cooperative projectiles and advancements in guidance, navigation, and control and maneuvering flight bodies for an increase in flight control authority, high-speed near-field communications and, AI, will enable the defeat of future hard targets through coordinated, multiple near-simultaneous projectile impacts and are more efficient against soft targets by strategically dispersing the impact points of a number of reduced sized warheads. This capability has the autonomous collaboration and cooperation required for precise projectile and warhead impacts in the short timeframe of the terminal engagement increasing the corps and division’s ability to dominate and win in armed conflict. (RC 11)

(4) Research to understand which human cognitive skills are critical enablers of rapid adaptation to disruptive change and are necessary to understand and guide the development of AI, along with research to effectively train those skills, will lead to the development of future training approaches necessary for Soldier/human-AI teaming to be implemented in combat. Preparing Soldiers for volatile technology-induced change will allow them to function effectively and adapt in future AI-enabled maneuver environments. (RC 1, RC 5, RC 6, RC 7)

(5) Research into AI enabled predictive modeling of adversarial intentions and courses of action, where AI will collect and collate adversary doctrine, training, terrain; tactics, techniques, and procedures; and personalities to produce predictive models of potential adversary courses of action will allow commanders and staffs to reduce the time for the military decision making process. This advancement will enable commanders and staff to refine potential adversary actions and more quickly produce friendly courses of action resulting in greater tempo of operations. (RC 1, RC 7, RC 15)

(6) Research in causal feature relationship identification, where causal inference is used to aid in determining components, objects, and signals from different modalities with complex relationships will enable the determination of the optimal number and sub-set of sensor within a sensor network to monitor and process time-series data to generate sources of potential actionable information. This will enable the efficient use of sensors, where sensors within the network that may be redundant or irrelevant to the task could be reallocated to satisfy other information requirements. (RC 1, RC 7)

(7) Research in atomic physics exploiting breakthroughs in laser cooling and trapping of atoms and ions is enabling new architectures for atomic clocks, including ones based on 3D optical lattices, optical tweezer arrays, and atoms trapped in cavities, enabling precision time six orders of magnitude beyond current GPS clocks, which when combined with research in quantum entanglement distribution will enable world-wide clock synchronization at unprecedented precision without the use of GPS. Greater precision in time and network synchronization will enable integration of capabilities across echelons and domains to deliver effects against widely distributed targets in time, space, and purpose to enable decisive maneuver. (RC 6, RC 11)

(8) Research in human-guided AI cycle-of-learning are integrating different forms of human interactions with AI at different stages of product development to effectively adapt a single AI's behavior and performance over time to increase the ability of blue forces to respond to adversarial actions, new technologies, environmental changes, and mission requirements; decrease training data requirements; and increase appropriate Soldier trust and use of technology. Human-guided AI across product development dramatically reduces the time to field and update blue force AI enhancing the capability to conduct cross-domain maneuver ranging from decreasing decision making time to increase coordination capabilities and cross echelon situational understanding. (RC 6, RC 11)

(9) Research in opportunistically sensing Soldier intent and interest coupled with advancing methodologies to sense and interpret Soldier behavior in the real-world environments are enabling AI to use the human brain to prioritize cross domain tactically-critical information without providing any additional burden or stress on the operator. Tactical awareness via collective knowledge will allow blue force AI to infer and integrate the intent of Soldiers as it evolves with mission execution and create a form of super-human intelligence that leverages the tactical knowledge of Soldiers with the speed and processing power of AI. (RC 1, RC 6, RC 11)

(10) Research into biometric assessment of team performance will allow for real-time assessments of human-agent (AI) teaming enabling rapid reassignment of both Soldiers and AI agents to more effectively team and thus optimize to accomplish mission objectives. New methods of physiological synchrony, shared representations of external constructs, and spatiotemporal scales of interactions provide the precision necessary to rapidly adapt Soldier/AI teams to ensure high tempo operations. (RC 1, RC 5)

(11) Research in modeling of human-AI team behaviors that link individual team members (human or AI) to overall team outcomes provides the foundational capability necessary to alter behavior rapidly and increase team performance and even introduce new team capabilities. Rapidly reconfigurable Soldier-AI teams allow for teams of Soldiers and intelligent technologies to rapidly to significant changes in team capability and overcome challenges associated with the effects of EMS capabilities, evolving JIM capabilities, and MDO coordination and complexity. (RC 1, RC 5)

(12) Research in computational social science to create verifiable models of social networks and human behavior to understand and predict when coordinated social media actions will likely become real-world adversaries. Advancements in computational social science will enable public

opinion forecasting (akin to weather models for precipitation) from “what if...?” scenario testing of information operations for non-kinetic options as threats emerge. (RC 1, RC 5, RC 15, RC 16)

(13) Ghost imaging (both classical, using thermally correlated photon pairs, and quantum, exploiting entangled photon pairs) may enable imaging of targets at standoff without the illumination allowing the adversary to detect the location of the imaging system. This advancement would deny the adversary’s ability to sense and target friendly forces, and so enabling freedom of maneuver, force protection, and C2. (RC 7, RC 8)

C-4. Enabling technology for decision making

a. Corps and divisions require the ability to increase the rate and scope of decision making to enable synchronization and employment of formations and capabilities through movement in combination with converged lethal and nonlethal capabilities across multiple domains, the EMS, and the information environment on the battlefield.

b. Breakthrough technological innovations.

(1) Research in image processing and activity recognition will rapidly train algorithms from sparse, unlabeled data rather than from a large databases of labeled images since the latter is not available for complex operational environments. This advancement will enable robust performance of assisted target recognition that can adapt to the changing operational environment. (RC 1, RC 6, RC 7)

(2) Research that links two approaches that use various taxonomies and variables to express imperfect information to model and represent uncertainty for different modalities of data (for example, sensor time series data, warfighter function tasks decision variables) and weighs the imperfect nature of the source information and influencing factors will begin to capture how commanders weigh information prior to a decision. The ability to capture uncertainty of information in possible courses of actions developed through artificial reasoning based approaches such as this, will enable commanders to understand the negative outcomes associated with different courses of action. (RC 1, RC 5, RC 6, RC 11)

c. Breakthrough scientific discoveries.

(1) Research in event-based imagery, where data is generated only when there has been a change in the environment, has the potential to significantly reduce the amount of data that needs to be transmitted. This alternative to computer vision, which typically requires high bandwidth, will allow for the use of communication modes that are more robust but low bandwidth. (RC1, RC 5, RC 6, RC 7, RC 8)

(2) Research in learning human-machine interface technologies, task requirement dependent models of human-AI capabilities, and interactive machine learning are all using mission data and human-led after-action-reviews to iteratively adapt AI planning and coordination technologies on a mission-by-mission basis. Human-guided AI asset coordination capabilities will enhance blue

force capabilities to coordinate complex maneuver scenarios at speeds and accuracies to overmatch adversary technologies without requiring Soldiers to be in the loop. (RC 1, RC 5, RC 11)

(3) Research in algorithms and communication approaches for developing, maintaining and sharing situational awareness across and between humans and AI distributed across echelons are leading to the creation of mechanisms to understand gaps and inconsistencies in information flow and communications underlying decision making. Shared human-AI awareness will allow blue forces to enhance situational awareness throughout the kill-chain and develop stronger, more flexible decision making that is resilient to unforeseen events and novel adversarial actions. (RC 7)

(4) Research into user-guided AI training, or non-technical user interactive machine learning, focuses are allowing non-technical experts (such as Soldiers in the field) to train AI systems as, or more, effectively than AI experts will enable mission critical adjustments and adaptations by intelligence systems at the edge and on timescales unmatched by expert-driven development. Non-technical user trained AI allows Soldiers to align mission planning, asset allocation, target acquisition, responses to evolving threats, and mobility to situational demands before, during and after each mission. (RC 1, RC 5, RC 6)

(5) Research on multi-timescale models of individual humans and machine learning based predictions of future human behaviors will enable AI to infer human information processing performance and will allow for future AI to weight inputs from multiple humans in making decisions. AI-inferred human long-timescale processing will allow blue force future AI to have mechanisms to non-linearly improve its integration of Soldier intelligence into mission planning, asset coordination, mobility, and effects. (RC 1, RC 6, RC 7, RC 11)

(6) Research to transform raw and processed data into actionable information, where causal inference is used to aid in determining components, objects, and signals from different modalities with complex relationships to aid in forming the “best” hypothesis, will enable the generation of courses of action and present uncertainty of information. Advances in reason-based decision making will enable commanders to recognize and act quickly upon opportunities to seize the initiative. (RC 1, RC 5, RC 6, RC 11)

(7) Research that explores the degree to which deep reinforcement learning-based algorithms can be used for estimating the state of the adversary forces, assessing adversary and the friendly battle losses, predicting adversary’s strategy and upcoming actions as the battle unfolds will enable the formulation of friendly courses of action based on all this information. The deep reinforcement learning-based C2 system will enable operational planning and decision support in hyperactive, complex, rapidly unfolding multi-domain operations on short timelines to facilitate convergence during deliberate planning through the synchronization of effects across domains to create and exploit windows of superiority. (RC 1, RC 5, RC 6, RC 10, RC 11)

(8) Research into non-invasive, longitudinal measurements of physiology (brain, heart, skin, eye, and others) will enable objective assessment of Soldier performance fluctuations without interruption of mission execution. Algorithms that can incorporate contextual information and

adapt system performance based on objective, real-time assessment of Soldier task-specifics will enable rapid decision-making in high tempo operations. (RC 1, RC 5, RC 6, RC 11)

(9) Research in team science to predict emergent phenomena in teams and organizations by creating new measures, models, and theories that capture cognitive and behavioral processes of networked human systems that will provide commanders and soldiers with tools and techniques to explore their decision option space for improved decision-making. Advancements in this area will enable the use of team science and knowledge management principles to rapidly constitute and support high performance teams for complex decision-making within joint operations. (RC 1, RC 5, RC 6, RC 11)

(10) Research in human-agent teaming for intelligence operations (HAT-IO) to reduce decision-making errors from knowledge loss inherent in human processing of intelligence associated with team based processing and handoffs during shift (or agency) changes. HAT-IO will enable teams of analysts to process complex and unwieldy amounts of disparate information efficiently and effectively for more informed decision-making. (RC 1, RC 5, RC 6, RC 11)

(11) Research in mutually adaptive human-AI systems and interactive machine learning will lead to the creation of mechanisms to maintain system stability in the face of scenario perturbations as well as techniques to leverage both human and artificial intelligences to ensure within and across domain team performance within Army defined boundaries. This advancement will enable human-AI adaptive systems that mimic cognitive learning and problem solving functions to rapidly adapt to changing conditions within the OE. (RC 1, RC 5, RC 6, RC 11)

(12) Research to exploit knowledge of mammalian spatial reasoning neural systems which have hundreds of different sub-architectures to AI, which currently has one of those sub-architectures, to develop a completely novel class of AI will revolutionize AI spatial reasoning capabilities. Neuro-derived AI will mimic human cognitive spatial reasoning functions faster than humanly possible and allow for independent autonomous maneuver in complex MDO environments. (RC 1, RC 5, RC 6, RC 11)

C-5. Conclusion

The scientific research and technology solutions in this appendix support the RCs necessary for multi-domain maneuver in 2028-2040 and beyond. The solutions focus on providing extensive improvements to signature management, maneuver-enabling technologies, and decision making enabled by technical advancements in AI. Critical areas for future advancement also include, but are not limited to network, fires, and sustainment, where details on the recommended science and technology capabilities are covered in the science and technologies appendices of the other concepts in the Army Concept Framework. Achieving these capabilities will require targeted investment, extensive experimentation, and continuous collaboration with academic experts, joint partners, key stakeholders, and industry leaders. These research efforts will enable the continuous convergence of lethal and nonlethal effects across all domains and environments, where the solutions will enable Army forces to dominate and win in close combat, deterring or defeating near-peer threats, achieving mission objectives, and returning to competition on favorable terms.

Appendix D Dependencies

D-1. Introduction

Maneuver required capabilities generate dependencies upon other concepts. Additionally other concepts have dependencies upon maneuver. This section will address both dependencies from and dependencies on maneuver. This section identifies the key dependencies known at the time of publication. As FCC continues to experiment with MMDO, these dependencies will be refined and more dependencies will most likely be identified.

D-2. Dependencies derived from the MMDO concept.

Under Development

D-3. Dependencies on the MMDO concept

Under Development

Appendix E Space and Cyberspace Scope Maneuver

E-1. Introduction

a. The MMDO describes how, in the future operational environment, Army formations will conduct maneuver to defeat peer adversaries and regional competitors. The concept does not attempt to describe detailed maneuver or technical actions in all domains individually, but rather how future Army formations integrate effects across multiple domains and environments to gain positions of advantage relative to the adversary, the terrain, and the population.

b. Descriptions of space and cyberspace effects in the MMDO center on select examples for how those capabilities enable the components of the solution in competition and conflict. Specifically, the MMDO focuses on how cyberspace and space capabilities integrate with fires and effects from other domains to enable land maneuver in depth to gain positions of advantage, penetrate adversary defenses and enable exploitation.

c. The concept focuses on how maneuver commanders at echelon employ space and cyberspace capabilities in their control and/or access joint and national level capabilities to perform tactical mission and enabling tasks as part of an integrated scheme of maneuver. The intent is to describe effects in operational terms used by maneuver planners (such as manipulate, degrade, deny, destroy, and disrupt). Subsequent functional, supporting concepts or Army and joint doctrine will describe the detailed technical processes and requirements to accomplish domain specific tasks across joint warfighting functions.

E-2. Example space and cyberspace tasks in scope for the MMDO concept

a. Cyberspace.

- Control critical commercial network infrastructure to deny use by adversary proxy forces.
- Block adversary network penetration to prevent exploitation by adversary information warfare systems.
- Clear mission command and fires networks of adversary exploits to create resilient network paths for sensors and shooters links.
- Canalize adversary cyber intrusions to divert adversary cyber-attacks.
- Occupy adversary information warfare systems to enable counter narratives.
- Disrupt adversary C2 networks to prevent rapid reaction to friendly ground movement.
- Breach adversary network security systems to open gaps in adversary system of systems.
- Reduce network options for adversary SOF operating to support areas to enable detection.
- Destroy adversary cyber infrastructure to prevent use during maneuver period.
- Seize network infrastructure to surprise adversary cyber force.

b. Space.

- Secure space communications architecture to enable ISR-strike links to deep areas.
- Suppress adversary space systems to deny satellite coverage of support and close areas.
- Reduce adversary access to commercial space systems to enable windows of domain advantage.
- Disrupt adversary C2 satellite communications to prevent adversary long-range fire-strike links.
- Contain adversary counter-space effects to enable resilient C2 systems.
- Fix adversary space ISR to open covered and concealed movement route for BDEs.
- Occupy adversary space effects with decoys to deceive from main effort.
- Provide optimized PNT services to support maneuver and enable precision fires.
- Provide overhead persistent infrared-derived alerts of adversary activity to protection maneuver forces.
- Provide terrestrial and space weather forecast information to identify periods of impacted adversary ISR capabilities or advantageous mission windows.

E-3. Example of space and cyberspace descriptions out of scope

a. Cyberspace.

- Communications methods (digital vs. analog).
- Transit of data through circuits and routing across the Department of Defense Information Network.
- C2 constructs and process for cyber mission forces.
- National intelligence operations in and through cyberspace.
- Operational analytical support to cyberspace operations planning.
- Identification of specific target and system vulnerabilities for cyber operations.
- Modification or destruction of specific hardware or software systems and sub-components.
- Detailed or technical description of maneuver in blue, gray, or red cyberspace.

- Network latencies and performance differences between messaging models, remote data stores, and local data stores.
- Contingency software systems to sustain cyber capabilities.
- Logical connectivity and detailed primary, alternate, contingency, and emergency plans for cascading cyber systems.

b. Space.

- Descriptions of satellite communications and integrated space communications systems.
- C2 constructs and processes for space forces.
- Technical joint and national level space ISR collection and processing, exploitation, and dissemination processes.
- Space domain forensics to describe attacks.
- Intelligence community support to space control operations.
- Space Command and U.S. Strategic Command space-targeting cycles and processes
- Space environmental factors related to movement of sensors and platforms.
- Movement of space, control, ground, or terrestrial operations.
- Technical protection of space, link, and ground segments.
- Technical hardware and software or energy sustainment of space systems.

Glossary

The glossary contains acronyms, abbreviations, and terms with Army or joint definitions. Those acronyms and definitions marked by an asterisk (*) and located in section III indicate a new acronym or term, or one modified from what is contained in current doctrine, regulations, or hierarchical concepts.

Section I

Abbreviations

A2	anti access
ACC	Army capstone concept
AD	anti denial
ADP	Army doctrine publication
AFC	Army Futures Command
AI	artificial intelligence
AO	area of operations
AOC	Army operating concept
AOR	area of responsibility
ATP	army techniques publication
BCT	brigade combat team
BDE	brigade
BDP	battlefield development plan
C2	command and control
CBRN	chemical, biological, radiological, nuclear
CCJO	capstone concept for joint operations
CEMA	cyber electromagnetic activities
CFT	cross-functional team
CJOA	combined joint operational area
CONUS	continental United States
CSA	Chief of Staff of the Army
DA	Department of the Army
DIME	diplomatic, information, military, and economic
DOD	Department of Defense
DOTMLPF-P	doctrine, organization, training, materiel, leadership and education personnel, facilities, and policy
EA	electronic attack
EAB	echelons above brigade
EMS	electromagnetic spectrum
EO	electro-optic
ES	electronic warfare support
EW	electronic warfare
FCC	Futures and Concepts Center
FM	field manual
GCC	geographic combatant command
GPS	global positioning system
HAT-IO	human-agent teaming for intelligence operations

IADS	integrated air defense system
IE	information environment
IFC	integrated fires complex
IR	infrared
ISR	intelligence, surveillance, and reconnaissance
JADC2	Joint All Domain Command and Control
JCIC	Joint Concept for Integrated Campaigning
JIM	joint, interorganizational, and multinational
JP	joint publication
JTF	joint task force
LOC	line of communication
LRPF	long range precision fires
LSCO	large-scale combat operation
MDO	multi-domain operations
MI	military intelligence
MMDO	maneuver in multi-domain operations
OE	operational environment
OPCON	operational control
PLA	People's Liberation Army
PLAA	Peoples Liberation Army Army
PNT	position, navigation, and timing
RAS	robotic and autonomous systems
RC	required capability
RF	radio frequency
RSOI	reception, staging, onward movement, and integration
S&T	science and technology
SOF	special operations forces
TACON	tactical control
TP	TRADOC Pamphlet
TRADOC	United States Army Training and Doctrine Command
TSC	Theater Sustainment Command
WMD	weapons of mass destruction
WME	weapons of mass effect
UAS	unmanned aircraft system
U.S.	United States
UW	unconventional warfare

Section II

Terms

administrative control

Direction or exercise of authority over subordinate or other organizations in respect to administration and support. (JP 1)

adversary

A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged. (JP 3-0)

agility

Flexibility of mind and an ability to anticipate and adapt to uncertain or changing situations. (TP 525-3-3)

anti-access

Actions and capabilities, usually long-range, designed to prevent an opposing force from entering an operational area. (Joint Operational Access Concept)

area denial

Actions and capabilities, usually of shorter range, designed to limit an opposing force's freedom of action within an operational area. (Joint Operational Access Concept)

area of operations

Operational area defined by the Joint Force commander for land and maritime forces that should be large enough to accomplish their missions and protect their forces. (JP 3-0)

area of responsibility

Geographic area associated with a combatant command within which a geographic combatant commander has authority to plan and conduct operations. (JP 1)

Army communications network

Army's portion of the DOD information network; encompasses all Army information management systems and information systems that collect, process, store, display, disseminate, and protect information worldwide. (Modified from TP 525-3-3).

Army service component command

Command responsible for recommendations to the Joint Force commander on the allocation and employment of Army forces within a combatant command. (JP 3-31)

assign

Place units or personnel in an organization where such placement is relatively permanent, and/or where such organization controls and administers the units or personnel for the primary function, or greater portion of the function, of the unit or personnel. (JP 3-0)

attach

Placement of units or personnel in an organization where such placement is relatively temporary. (JP 3-0)

authority

Delegated power to judge, act, or command. (ADP 6-0)

campaign

Series of related major operations aimed at accomplishing strategic or operational objectives within a given time and space. (JP 5-0)

capability

Primary abilities (lethal and non-lethal fires and effects) essential to the accomplishment of tactical and operational objectives in each domain.

capacity

Capability with sufficient scale to accomplish the mission; actual or potential ability to perform. (TP 525-3-1)

close combat

Warfare carried out on land in a direct-fire fight, supported by direct and indirect fires and other assets. (ADP 3-0)

combatant command

Unified or specified command with a broad continuing mission under a single commander established and so designated by the president, through the secretary of defense and with the advice and assistance of the chairman of the joint chiefs of staff. (JP 1)

combat power

Total means of destructive, constructive, and information capabilities that a military unit or formation can apply at a given time. (ADP 3-0)

combined arms

Synchronized and simultaneous application of all elements of combat power that together achieve an effect greater than if each element was used separately or sequentially. (ADP 3-0)

command

To lawfully exercise authority derived from rank or assignment, direct subordinate efforts, and utilize resources to accomplish tasks. (TP 525-3-3)

common operating environment

Approved set of computing technologies and standards that enable secure and interoperable applications to be developed rapidly and executed across a variety of computing environments. (U.S. Army CIO/G-6 annex b to Landwarnet 2020 and beyond enterprise architecture version 2.0: definitions and guidance for the common operating environment)

common operational picture

Single display of relevant information within a commander's area of interest tailored to the user's requirements and based on common data and information shared by more than one command. (ADP 6-0)

competition

Exists when two or more actors in the international system have incompatible interests but neither seeks to escalate to open conflict. (JCIC).

consolidate gains

Activities to make enduring any temporary operational success and set the conditions for a stable environment allowing for a transition of control to legitimate authorities. (ADP 3-0)

consolidation

Organizing and strengthening in a newly captured position so that it can be used against the enemy. (FM 3-90.1)

consolidation area

Portion of the commander's area of operations that is designated to facilitate the security and stability tasks necessary for freedom of action in the close area and to support the continuous consolidation of gains. (ADP 3-0)

convergence

Rapid and continuous integration of capabilities in all domains that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative. (TP 525-3-1)

critical capabilities

Primary abilities essential to the accomplishment of the objective. (JP 5-0)

cross-domain

Having an effect from one domain into another. (TP 525-3-1)

cross-domain maneuver

The employment of mutually supporting lethal and nonlethal capabilities of multiple domains to create conditions designed to generate overmatch, present multiple dilemmas to the enemy, and enable Joint Force freedom of movement and action. (TP 525-3-6)

decentralized

Delegation of authority, information, warfighting capabilities, and other resources to subordinates at the lowest practical level which enables aggressive, independent, and informed initiative to develop the situation; seize, retain, and exploit the initiative; and cope with uncertainty to accomplish the mission within the Army ethic and the commander's intent. (TP 525-3-3)

decisive point

A geographic place, specific key event, critical factor, or function that, when acted upon, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving the operation's purpose. (JP 5-0)

decisive space

Conceptual geographic and temporal location where the full optimization of the employment of cross-domain capabilities generates a marked advantage over an enemy and greatly influences the outcome of an operation. (TP 525-3-1)

deductive reasoning

The process of reasoning from one or more statements (premises) to reach a logically certain conclusion.

deep fires areas

Areas beyond the feasible range of movement for conventional forces, but where joint fires, special operations forces, information, and virtual capabilities can be employed. (TP 525-3-1)

deep maneuver area

Area where maneuver forces can go (beyond the close area) but is so contested that maneuver still requires significant allocation and convergence of multi-domain capabilities. (TP 525-3-1)

defeat

To render a force incapable of achieving its objectives. (ADP 3-0)

depth

The extension of operations in time, space, or purpose, to achieve definitive results. (ADP 3-0)

denied spaces

Areas where the adversary can severely constrain U.S. and allied forces' freedom of action through anti-access and area denial and other measures. (TP 525-3-1)

destroy

Tactical mission task that physically renders an enemy force combat-ineffective until it is reconstituted. Alternatively, to destroy a combat system is to damage it so badly that it cannot perform any function or be restored to a usable condition without being entirely rebuilt. (FM 3-90-1)

dis-integrate

Break the coherence of the enemy's system by destroying or disrupting its subcomponents (such as command and control means, information collection, critical nodes, etc.) Degrading its ability to conduct operations while leading to a rapid collapse of the enemy's capabilities or will to fight. (TP 525-3-1)

dislocate

Employ forces to obtain significant positional advantage, rendering the enemy's dispositions less valuable, perhaps even irrelevant (ADP 3-0)

direct support

Support relationship requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance. (FM 3-0)

dispersion

Deliberate or accidental reaction to enemy or adversary capabilities to spread out or break up forces, reduce the targetable mass of friendly forces, more effectively cover terrain in an area of operations, and gain operational and tactical flexibility. (TP 525-3-1)

domain

Area of activity within the operational environment (land, air, maritime, space, and cyberspace) in which operations are organized and conducted. (TP 525-3-1)

enemy

Party identified as hostile, against which the use of force is authorized. (ADP 3-0)

executive agent

DOD component which has been designated by the president, DOD, or congress as the sole agency to perform a function or service for others. (DA memo 10-1)

expeditionary

Ability to deploy task-organized forces on short notice to austere locations, capable of conducting operations immediately upon arrival. (TP 525-3-1)

exploitation

Taking full advantage of success in military operations, following up initial gains, and making permanent the temporary effects already created. (JP 2-01.3)

force tailoring

Process of determining the right mix of forces and the sequence of their deployment in support of a Joint Force commander. (ADP 3-0)

function

(Army) a practical grouping of tasks and systems (people, organizations, information, and processes) united by a common purpose. (ADP 1-01)

hybrid threat

Diverse and dynamic combination of regular forces, irregular forces, terrorist forces, or criminal elements unified to achieve mutually benefitting threat effects. (ADP 3-0)

inductive reasoning

The process in which premises are viewed as supplying some evidence for the truth of the conclusion.

information environment

Aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information. (JP 3-13)

information environment operations

Integrated employment of information-related capabilities in concert with other lines of operation to influence, deceive, disrupt, corrupt, or usurp the decision making of enemies and adversaries while protecting our own; to influence enemy formations and populations to reduce their will to fight; and influence friendly and neutral populations to enable friendly operations. (TP 525-3-1)

information operations

The integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own. (JP 3-13)

information-related capabilities

Capabilities, techniques, or activities that create or employ information to shape the information environment toward a desired outcome. (TP 525-3-3)

integration

Arrangement of military forces and their actions to create a force that operates by engaging as a whole. (JP 1)

interoperability

Ability of two or more organizations to operate together effectively and efficiently as an integrated team to accomplish a common goal. (TP 525-3-3)

interorganizational

Includes U.S. government departments and agencies; state, territorial, local, and tribal government agencies; foreign military forces and government agencies; international organizations; nongovernmental organizations; and the private sector.” (derived from JP 3-08).

isolate

Tactical mission task that requires a unit to seal off—both physically and psychologically—an enemy from sources of support, deny the enemy freedom of movement, and prevent the isolated enemy force from having contact with other enemy forces. (FM 3-90-1)

joint all domain command and control

The art and science of decision-making to rapidly translate decisions into action, leveraging capabilities across all-domains and with mission partners to achieve operational and information advantage in both competition and conflict

land domain

Earth’s physical surface located above the high water mark and inclusive of the physical, cultural, social, political, and psychological aspects of human populations that reside upon it. (TP 525-3-1)

landpower

Ability—by threat, force, or occupation—to gain, sustain, and exploit control over land, resources, and people. (ADP 3-0)

main effort

Designated subordinate unit whose mission at a given point in time is most critical to overall mission success. (ADP 3-0)

maneuver*

The employment of forces through movement in combination with lethal and nonlethal effects across multiple domains, the electromagnetic spectrum, and the information environment to destroy or defeat enemy forces, control land areas and resources, and protect populations.

mission command

Overarching leadership philosophy and an integrative command warfighting function. (TP 525-33)

mission command philosophy

Leaders convey a clear intent and empower subordinates to take informed initiative. (TP 525-3-3)

multi-domain

Dealing with more than one domain at the same time. (TP 525-3-1)

multi-domain operations

Operations conducted across multiple domains and contested spaces to overcome an adversary's (or enemy's) strengths by presenting them with several operational and/or tactical dilemmas through the combined application of calibrated force posture; employment of multi-domain formations; and convergence of capabilities across domains, environments, and functions in time and spaces to achieve operational and tactical objectives. (TP 525-3-1)

mutual support

That support which units render each other against an enemy, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities. (JP 3-31)

near-peer adversaries

Nation states with the intent, capabilities, and capacity to contest U.S. interests globally in most or all domains and environments. (TP 525-3-1)

operational control

Authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. (JP 1)

operational environment

Composite of conditions, circumstances, and influences that affect the employment of capabilities and bear on the decision of the commander. (JP 3-0)

operational preparation of the environment

Conduct of activities in likely or potential areas of operations to prepare and shape the operational environment. (JP 3-05)

operational support area

Area of responsibility from which most of the air and maritime capabilities derive their source of power, control, and sustainment, as well as where ground forces enter theater, organize, and prepare for rapid onward movement and integration. (TP 525-3-1)

organic

Assigned to and forming an essential part of a military organization as listed in its table of organization for the Army, Air Force, and Marine Corps, and are assigned to the operating forces for the Navy. (JP 1)

operational initiative

The setting of tempo and terms of action throughout an operation. (ADP 3-0)

overmatch

Application of capabilities or unique tactics either directly or indirectly, with the intent to prevent or mitigate opposing forces from using their current or projected equipment or tactics. (TP 525-3-1)

peer adversary*

Those nation states with the intent, capabilities, and capacity to contest U.S. interests globally in most or all domains, the EMS, and the information environment."

position of relative advantage

Location or the establishment of a favorable condition within the area of operations that provides the commander with temporary freedom of action to enhance combat power over an enemy or influence the enemy to accept risk and move to a position of disadvantage. (ADP 3-0)

regionally aligned forces

Army units assigned to combatant commands, allocated to a combatant command, and those capabilities service retained, combatant command aligned, and prepared by the Army for combatant command missions. (TP 525-3-1)

security cooperation

All DOD interactions with foreign security establishments to build security relationships that promote specific United States security interests, develop allied and partner nation military and security capabilities for self-defense and multinational operations, and provide United States forces with peacetime and contingency access to allied and partner nations. (JP 3-20)

security force assistance

DOD activities that contribute to unified action by the U.S. government to support the development of the capacity and capability of foreign security forces and their supporting institutions. (JP 3-22)

semi-independent maneuver

Operating dispersed for extended periods without continuous [or contiguous] support from higher echelons with the ability to concentrate combat power rapidly at decisive points, and in spaces (domains) to achieve operational objectives within the theater campaign. (TP 525-3-1)

shape the security environment

Combinations of activities that reassure partners, curtail aggression, and influence local perceptions, while establishing conditions that support the employment of Army forces. (TP 525-3-1)

strategic support area

Area of cross-combatant command coordination, strategic sea and air lines of communications, and the homeland. (TP 525-3-1)

support to civil administration

Assistance given by U.S. Armed Forces to stabilize or enhance the operations of the governing body of a foreign country, by assisting an established or interim government. (FM 3-57)

survivability

Quality or capability of military forces which permits them to avoid or withstand hostile actions or environmental conditions while retaining the ability to fulfill primary mission. (ATP 3-37.34)

synchronization

Arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. (JP 2-0)

system

A group of interacting, interrelated, and interdependent components or subsystems that form a complex and unified whole. Systems have a purpose with their parts arranged in a way (structure) to carry out their purpose. (TP 525-3-3)

tactical control

Authority over forces that is limited to detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. (JP 1)

tactical support area

Area that directly enables decisive tactical operations in the close area and extension of capabilities into the deep maneuver and deep fires areas. (TP 525-3-1)

task organization

Temporary grouping of joint, interorganizational, and multinational partners designed to accomplish a particular mission or pursue a mutual line of effort. (TP 525-3-3)

task organizing

Act of designing a force, support staff, or sustainment package of specific size and composition to meet a unique task or mission. (ADP 3-0)

threat

Any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests, or the homeland. (ADP 3-0)

transitional military authority

A temporary military government exercising the functions of civil administration in the absence of a legitimate civil authority (FM 3-07).

unified action

Synchronization, coordination, and/or integration of the activities of governmental and nongovernmental entities with military operations to achieve unity of effort (JP 1)

unified command plan

The document, approved by the president, that sets forth basic guidance to all unified combatant commanders; establishes their missions, responsibilities, and force structure; delineates the general geographical area of responsibility for geographic combatant commanders; and specifies functional responsibilities for functional combatant commanders. (JP 1)

warfighting function

A system (people, processes, and tools), other enabling capabilities, and group of tasks united by a common purpose that leaders use to accomplish missions and train objectives. (TP 525-3-3)

windows of superiority

Converging capabilities in time and space in selected domains and environments to enable commanders to gain localized control or physical, virtual, and/or cognitive influence over a specified area to prevent its use by an enemy or to create conditions necessary for successful friendly operations. (TP 525-3-1)

Section III**Special terms****area of influence***

The assigned area of operations wherein a commander is capable of acquiring and fighting enemy units with assets organic to, or in support of, his command.

area of interest*

The area extending beyond a command's area of influence into adjacent unit areas of influence, and potentially into enemy territory, which contains enemy forces capable of affecting future operations.

Army Forces*

Army component and senior Army command of all Army Forces assigned or attached to a combatant command, subordinate Joint Force command, joint functional command, or multinational command. (Modified from FM 3-94 definition).

cognitive dimension*

Dimension of the information environment within the minds of those who are affected by and act upon information. (Adapted from description in FM 3-0).

deter*

Discouraging an action or event through instilling doubt or fear of the consequences.

echeloned maneuver*

Army air-ground movement in depth supported by ground fires along with air, maritime, space and cyberspace generated effects to gain positions of advantage, penetrate adversary defenses, and conduct exploitation.

force posture*

Encompasses forward positioned forces; rapidly deployable formations and transport means; and integration of joint, interorganizational and multinational partner capabilities, as well as, the cross-section of relationships, activities, facilities, legal arrangements, and sustainment necessary for proper employment.

grade plate*

The rank structure for an organization's command, leadership, and staff positions designed to ensure that a specific unit or organization, and the army as a whole, has the leadership education and experience and the right combination of strategic, operational, tactical, and technical skills necessary to accomplish the missions and tasks for which the unit or organization is designed.

information narrative (narrative)*

Commander's visualization of outcomes in the information environment achieved through the combination of actions in the physical, virtual, and cognitive domains.

information warfare*

Adversary employment of information-related capabilities in a deliberate disinformation campaign supported by actions of the intelligence organizations designed to confuse friendly states and forces and achieve strategic objectives at minimal cost.

integrated air defense system*

The layered tactics; systems; ISR; and C2 to detect, track, identify, target, and engage air threats across the tactical, operational and strategic echelons. (derived from TP 525-3-8)

integrated fires complex*

Fires systems designed for the coordinated employment of massed and precision surface-to-surface indirect fires linked to real-time intelligence data that is fused through artificial intelligence at command post and fire direction centers at multiple echelons. (Derived from TP 525-3-8).

mesh*

To connect devices directly, dynamically, and non-hierarchically to as many other devices as possible allowing them to relay critical data without interruption and cooperate, self-organize, and

self-configure to accomplish tasks collectively despite individual device degradation or destruction.

orchestrate*

Arrangement and integration of multi-domain capabilities and activities in concert with one another, varying in scope and scale across time and space, to achieve the optimal effect across all domains that result in the creation and exploitation of windows of superiority during multi-domain operations.

peer adversary*

Those nation states with the intent, capabilities, and capacity to contest U.S. interests globally in most or all domains, the ems, and the information environment.

range of military operations*

Activities, tasks, missions, and operations along the competition continuum from peace to war that vary in purpose, scale, risk, and combat intensity and which can be grouped into military engagement, security cooperation, and deterrence; crisis response and limited contingency operations; and large-scale combat operations. (Adapted from FM 3-0 description).

scale*

To increase or decrease the capacity of specific capabilities

span of control*

Number of subordinate units that a commander can control effectively.

tailored*

To be provided the warfighting capabilities required for the situation and mission.

versatile*

Ability to be tailored and scaled as required across the range of military operations and the competition continuum

ENDNOTES

¹ The Army's four strategic roles—shape security environments, prevent conflict, prevail in large-scale ground combat, and consolidate gains.

² Area of Operations – An operational area defined by a commander for land and maritime forces that should be large enough to accomplish their missions and protect their forces.

³ Battlespace-- The physical and non-physical areas or spaces where military operations are conducted to achieve military goals consisting of all domains (air, land, maritime, space, and cyberspace), the electromagnetic spectrum, and the information environment (including human cognitive aspects). It includes factors and conditions that must be understood to successfully apply combat power, protect the force, or complete the mission, including enemy and friendly armed forces, infrastructure, weather, terrain, and populations within the operational areas and areas of interest.

⁴ Though the Army has tried to fight without a dedicated operational-level warfighting echelon history has demonstrated that the Army will recognize the requirement and establish such a structure. Further, wargaming and experimentation has shown that in theater with a peer or near peer adversary that this echelon must be established in competition, prior to the onset of hostilities, if the Army is to defeat enemy attempts to use military force to achieve a fait accompli and to meet the requirements of the expanded battlefield and the increased tempo and complexity of multi-domain campaigns.

⁵ In subsequent capability development efforts, developers must remain cognizant that the use of older titles can make it more difficult for some to envision a new organization that operates differently than its historic version. While the MMDO Concept will use these historic terms, capability developers may later determine that a new title is required because this potential cognitive bias may impede the development of necessary capabilities for the future Army.

⁶ The National Defense Strategy “contact force” is composed of forward presence forces. The “blunt force” is a combination of forward presence forces and early-entry expeditionary forces. The “surge force” is follow-on expeditionary forces that arrive after the outbreak of armed conflict.

⁷ This concept will use the term and idea of Joint All Domain Command and Control (JADC2) to align to current joint initiatives. Emerging Army and Joint concepts are continuing to explore C2 and JADC2. When approved, the U.S. US Army Concept for Command and Control will take precedence in any discussion of JADC2 in this document.

⁸ This document uses the definition for Convergence found in TP 525-3-1 The U.S. Army in Multi-Domain Operations 2028 which defines convergence as the rapid and continuous integration of capabilities in all domains, the electromagnetic spectrum, and information environment that optimizes effects to overmatch the enemy through cross-domain synergy and multiple forms of attack all enabled by mission command and disciplined initiative.

⁹ The Army currently lacks methods to describe a correlation of forces which includes lethal and non-lethal effects to understand the impact of operations in non-physical domains and environments.

¹⁰ Kill-web-- the complete range of resources (planning, intelligence, collection, command & control, logistic and fires systems, etc.) available to execute operations aimed at generating an effect against an adversary’s physical, virtual, or cognitive nodes in order to meet a directed or desired outcome.

¹¹ Area of Influence— The area of influence is the assigned area of operations wherein a commander is capable of acquiring and fighting enemy units with assets organic to, or in support of, his command. It is assigned by a higher command as a geographical area determined by METT-TC and depicted by boundaries with a terminating line, which is generally the area between the assigned command’s forward line of own troops and terminating at the beginning of the higher command’s area of interest.

Area of Interest— The area of interest is the area extending beyond a command’s area of influence into adjacent unit areas of influence, and potentially into enemy territory, which contains enemy forces capable of affecting future operations. In general, an area of interest extends from the terminating line of the commander’s area of influence into to the next higher command’s area of influence.

¹² The art and science of decision-making to rapidly translate decisions into action, leveraging capabilities across all-domains and with mission partners to achieve operational and information advantage in both competition and conflict.

¹³ This concept will use the term Joint, Interorganizational, and Multinational (JIM). Interorganizational is defined as “Interorganizational includes U.S. government agencies; state, territorial, local, and tribal agencies; foreign government agencies; intergovernmental, nongovernmental, and commercial organizations, as appropriate for the mission”. This definition is derived from JP 3-08, June 2011.

¹⁴ The theater armies for Europe and the Indo-Pacific theaters are located within their respective theaters of operation. Additionally, the forward command post of U.S. Army Central is located in the Central Command AOR, with the main command post being located in the U.S. Also the theater army for Southern Command is located in the U.S.

¹⁵ Currently, the U.S. has one field army—Eighth Army—forward deployed in the Republic of Korea within the Indo-Pacific Command. Most recently, the U.S. established operational level commands during OEF and OIF to conduct operations within Afghanistan and Iraq respectively.

¹⁶ Operational Control (OPCON)--Authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. (JP 1)

Tactical Control (TACON)--Authority over forces that is limited to detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. (JP 1)

¹⁷ Unclassified, Adaptive Operations is the United States Air Force’s concept of operating aircraft from austere, forward airfields for short periods to support ground maneuver elements. Aircraft operating from these locations will include manned and unmanned platforms consisting of fighter, reconnaissance, and transport aircraft.

¹⁸ Operational Level Command Data Points graphics and all following graphics use Colorado Springs as a common reference point for scale reference.